

A REVISION OF THE GENUS LOMATIUM

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The genus *Lomatium* was described by Rafinesque¹ with a single species, *L. villosum*, which must accordingly be taken as the type of the genus. *Lomatium villosum* was based on a plant collected by Bradbury on the upper Missouri, and characterized as having white flowers and being entirely villous. It so happens that there are only three species of this genus in the region where Bradbury collected, namely *L. foeniculaceum*, *L. daucifolium*, and *L. orientale*. *L. orientale* is the only species of the three having white flowers, but the plants never are entirely villous. Although Bradbury collected specimens of *L. orientale*, it seems highly improbable that Rafinesque would term the plants villous. It is more probable that in the dried specimens the flower color was misinterpreted, and that the plant from which he drew his description was the yellow-flowered, villous *L. foeniculaceum* (*Peucedanum villosum* of Nuttall), the common species in the region on the upper Missouri visited by Bradbury.

In 1820 Sprengel² proposed the name *Cogswellia* in place of *Lomatium* Raf. which he considered to be antedated by *Lomatia* R. Br. (Proteaceae). Recent workers have used both *Cogswellia* and *Lomatium* in dealing with numerous species erroneously considered by numerous writers³ to be congeneric with the European *Peucedanum* L.

The name *Lomatium* was not used by American authors until 1900, when Coulter & Rose⁴ adopted it in their monograph

¹ Raf. Journ. Phys. **89**: 101. 1819.

² Spreng. in Linn. Syst. Veg. ed. Roem. & Schult. **6**: XLVIII. 1820.

³ cf. S. Wats. Proc. Am. Acad. **11**: 141. 1876, footnote.

⁴ Coult. & Rose, Contr. U. S. Nat. Herb. **7**: 204. 1900.

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of the Umbelliferae. In 1908 Jones⁵ adopted the generic name *Cogswellia*, considering *Lomatium* as a homonym of *Lomatia* R. Br. Coulter and Rose⁶ accepted the latter viewpoint in a later publication.

The name *Lomatium* Raf. was reinstated in 1918 by Macbride,⁷ who drew attention to the fact that *Lomatia* R. Br. (Proteaceae) and *Lomatium* Raf. (Umbelliferae) cannot properly be considered as homonyms, and that the retention of both is provided for in Article 57 of the International Rules of Botanical Nomenclature (Article 70, third edition) which reads in part: "When the difference between two names, especially two generic names, lies in the termination, these names are to be regarded as distinct even though differing by one letter only."

Since the monograph by Coulter and Rose,⁸ there has been no complete revision of the species of this complex and interesting genus. Numerous new species have been described, and the genus has been treated variously by authors of local manuals. It is still considered by most workers as one of the most difficult, because least understood, of the North American genera of Umbelliferae. It is in fact the largest genus of the family occurring in the United States. In distribution it is limited to the western United States, adjacent Canada, and Mexico, extending as far north as central Saskatchewan and southward into northern Sonora and Lower California. Its eastern limits apparently are from western Minnesota to Missouri. The greatest number of species are found in the Pacific coast states from the Columbia River area in eastern Washington to central California. In this area the genus has reached its greatest diversity.

The writer has had the opportunity of making field studies throughout most of this area. Herbarium material has been studied in all the larger herbaria in the United States and in many private collections. Whenever necessary, photographs

⁵ M. E. Jones, Contr. Western Bot. **12**: 30. 1908.

⁶ Coult. & Rose, Contr. U. S. Nat. Herb. **12**: 448. 1909.

⁷ Macbr. Contr. Gray Herb. n.s. **53**: 15. 1918.

⁸ Coult. & Rose, *loc. cit.* 1900.

of critical specimens have been obtained from European herbaria.

The study of this genus was suggested by Dr. J. M. Greenman of the Missouri Botanical Garden. The writer wishes to take this opportunity to thank him again for his valuable and experienced advice and assistance, and to thank the curators of the numerous herbaria in which collections have been studied and the many collectors who have contributed material. Without access to a large amount of material this study would have been impossible. Unfortunately there is space in this paper to cite but a small portion of the material examined, and for the widely distributed, well-known species only typical specimens are included.

Flower characters are relatively constant in the genus. Flower color varies from white to purple and yellow. The fruit is always dorsally compressed, with the lateral wings usually well developed. The dorsal ribs are obsolete to filiform, rarely subalate. The oil tubes vary from one to many in the intervals and are rarely obscure. The stylopodium is absent and the disc never inflated. The styles are filiform, deciduous, or persistent. The calyx teeth are usually inconspicuous, especially in the mature fruit.

The plants are mostly low-growing, acaulescent, or caulescent, from a globose tuberous or elongated subfusiform root. The stems may be solitary or many from the base, and are rarely branching above. The leaves, rarely entire in the young plant, are ternately to pinnately or quinate compound; the leaflets are filiform, sometimes greatly elongated, to suborbicular in outline, with the margins usually entire but sometimes dentate. The plants are glabrous to entirely or partially villous-tomentose. The involucre may be present or absent and is usually inconspicuous. The involucel bracts are rarely absent and vary to conspicuous, ovate-oblong, or obovate bractlets. The umbel is always compound and usually spreading with long rays. The pedicels are rarely less than 2 mm. long.

In this paper the characters of peduncle, ray, and pedicel length refer to the fruiting condition when these parts have reached their maximum length.

Lomatium Raf. Journ. Phys. **89**: 101. 1819.*Cogswellia* Spreng. in Linn. Syst. Veg. ed. Roem. & Schult. **6**: XLVIII. 1820.*Euryptera* Nutt. in Torr. & Gray, Fl. N. Am. **1**: 629. 1840.*Leibergia* Coult. & Rose, Contr. U. S. Nat. Herb. **3**: 575. 1896.*Cynomarathrum* Nutt. ex Coulter & Rose, Contr. U. S. Nat. Herb. **7**: 244. 1900.

"Cogswellia Raf." acc. to Coult. & Nels. Man. Bot. Centr. Rocky Mts. 362. 1909, in err.

Peucedanum of American authors, not of Linn.

Usually low, herbaceous, acaulescent or short-caulescent, glabrous or pubescent perennials, from globose tubers to long, thickened, subfusiform roots. Leaves petiolate, thin to subcoriaceous, ternately, pinnately, or quinate compound; ultimate leaf divisions few to many, suborbicular to elongated, filiform, crowded or remote; petioles broadened into sheaths at least toward the base. Inflorescence a compound umbel, usually spreading; peduncles equalling to exceeding the leaves; involucre mostly absent, never conspicuous; involucre bracts rarely absent, filiform to obovate, foliaceous to subscarious, distinct or connate; central umbellets and central flowers usually sterile, short-rayed, and short-pedicellate; flowers greenish-white, purple, or yellow; calyx teeth small; petals ovate to obovate with a narrowed, inflexed, acute to acuminate tip; stylopodium lacking. Fruit ovate to linear, flattened dorsally; lateral wings present; dorsal wings absent or filiform; wings thin; oil tubes small, one to many in the intervals, rarely obscure, two to several on the commissural side; carpophore divided to the base, usually persistent.

Type species: *Lomatium villosum* Raf. Journ. Phys. **89**: 101. 1819 (*L. foeniculaceum* (Nutt.) Coult. & Rose, Contr. U. S. Nat. Herb. **7**: 222. 1900).

KEY TO THE SPECIES

- A. Peduncles not enlarged at the apex.
- B. Fruit more or less deeply emarginate at each end, the wings distinct on each side of the body; leaflets mostly broad in outline.
- C. Leaf segments not pinnatifid, merely toothed or sometimes 3-lobed.
- E. Leaves 1-2-ternate; wings thickened, much broader than the body, oil tubes solitary in the intervals; plants of southern California
.....1. *L. lucidum*

- EE. Leaves ternate-pinnate; wings thin, about equalling to broader than the body; oil tubes 1-3 in the intervals.
 - I. Fruit broadly elliptical; plants mostly low, of Napa and Lake counties, California.....2. *L. repostum*
 - II. Fruit suborbicular; plants mostly taller, of southern Oregon and adjacent California.....3. *L. Howellii*
- CC. Leaf segments pinnatifid, usually incised.
 - F. Leaf blades large, longer than the petioles; fruit 12-15 mm. long; plants of San Nicolas Island, California.....5. *L. insulare*
- FF. Leaf blades smaller, mostly equalling or shorter than the petioles; fruit 7-10 mm. long; plants of the California mainland.
 - J. Leaf segments acerose-tipped; wings less than half the width of the body; plants of the eastern slopes of the Sierra Nevada Mts., Inyo Co., California.....6. *L. rigidum*
 - JJ. Leaf segments not acerose-tipped; wings broader than the body; plants of Monterey and San Luis Obispo counties, California.
 - O. Foliage green; fruiting rays 0.8-2.5 cm. long, pedicels 3-6 mm. long.....4. *L. parvifolium*
 - OO. Foliage pale; fruiting rays 3-6.5 cm. long, pedicels 7-17 mm. long.....4a. *L. parvifolium* var. *pallidum*
- BB. Fruit not emarginate or scarcely so, the wings more or less joined above and below the body; leaflets mostly narrow.
 - D. Plants mostly low, from globose or somewhat elongated tubers; leaves mostly small.
 - G. Ovaries and fruit variously pubescent.
 - K. Flowers white or purple; involucl bracts absent or setaceous....
.....7. *L. Gormanii*
 - KK. Flowers yellow; involucl bracts distinct, obovate or connate.
 - P. Tuber deep-seated, oblong; involucl bracts united nearly to the apex; fruit ovate, sessile or subsessile; oil tubes obscure....
.....14. *L. Watsoni*
 - PP. Tuber globose or occasionally elongated; involucl bracts distinct, obovate, scarious-margined; fruit oblong, pedicels about 2-4 mm. long; oil tubes prominent.....17. *L. Cous*
 - GG. Ovaries and fruit glabrous.
 - L. Involucl bracts absent or inconspicuous.
 - Q. Plants caulescent, alternately branched above; flowers yellow; fruiting pedicels 4-8 mm. long.....16. *L. ambiguum*
 - QQ. Plants acaulescent or short-caulescent, not branched above; flowers white; fruit subsessile.....8. *L. Piperi*
 - LL. Involucl bracts present, conspicuous.
 - R. Leaflets few; fruit linear, 1-1.5 mm. broad, constricted toward the apex, the wings almost obsolete.....9. *L. orogenioides*
 - RR. Leaflets several to many; fruit ovate to linear-oblong, 2-6 mm. broad, not constricted above, the wings obvious.
 - W. Involucl bracts linear to linear-lanceolate, sometimes more or less connate.
 - f. Leaflets filiform to linear, mostly elongated, up to 8 cm. long; flowers white or yellow.

- u. Flowers yellow; oil tubes solitary in the intervals.....
.....15. *L. leptocarpum*
- uu. Flowers white; oil tubes several in the intervals.
 - o. Involucel bracts distinct; fruiting pedicels lax, 6-17
mm. long.....10. *L. farinosum*
 - oo. Involucel bracts more or less connate; fruiting pedicels
suberect, 2-5 mm. long.....11. *L. Geyeri*
- ff. Leaflets short-linear, up to 5 mm. long; flowers white.
 - w. Umbels 2-5-rayed, fruiting rays 1-2 cm. long, pedicels
3-4 mm. long; fruit ovate, 5 mm. long..12. *L. Hendersoni*
 - ww. Umbels 12-17-rayed, fruiting rays 2.7-5.5 cm. long,
pedicels 8-12 mm. long; fruit linear-oblong, 7-10 mm.
long.....13. *L. Canbyi*
- WW. Involucel bracts obovate, sometimes connate.
 - g. Plants acaulescent; oil tubes 2-4 in the intervals.....
.....18. *L. montanum*
 - gg. Plants caulescent; oil tubes solitary in the intervals.....
.....19. *L. circumdatum*
- DD. Plants usually stouter, from more or less thickened, elongated tap-
roots, sometimes with a very deep-seated tuber.
- H. Leaves decompose, dissected into numerous small segments.
- M. Ovaries and young (sometimes mature) fruit variously pubes-
cent or roughened.
- S. Involucel bracts oblanceolate to obovate.
- X. Umbels 5-13-rayed; wings mostly broader than the body.
 - h. Mature fruit glabrous.....21. *L. utriculatum*
 - hh. Mature fruit papillate....21a. *L. utriculatum* var. *papillatum*
- XX. Umbels 14-25-rayed; wings equalling the body.....
.....20. *L. vaginatum*
- SS. Involucel bracts mostly linear, never obovate, sometimes reduced
to a sheath.
- Y. Young fruit more or less granulate-roughened; plants with
one or more upper stem leaves.
 - i. Petioles with a conspicuous white scarious margin; plants of
the northern Rocky Mts.....36. *L. Sandbergii*
 - ii. Petioles without a conspicuous white scarious margin; plants
of Plumas Co., California.....25c. *L. Plummerae* var. *Helleri*
- YY. Young fruit variously pubescent, not granulate-roughened;
plants acaulescent or with stem leaves from near the base.
 - j. Involucel bracts with a conspicuous scarious margin, never
tomentose nor villous.....24. *L. nevadense*
 - jj. Involucel bracts not conspicuously scarious-margined, more
or less tomentose or villous.
 - x. Plants acaulescent, usually low, up to 3, rarely 5, dm. tall.
 - y. Plants more or less villous throughout; petioles shorter
than the leaf blades.
 - p. Petioles 1-2.5 cm. long, usually sheathing through-
out; flowers yellow, tinged with purple; plants of
the Great Basin.....26. *L. MacDougali*

- pp. Petioles 3–8 cm. long, sheathing about to the middle; flowers yellow; plants of the Great Plains
28. *L. foeniculaceum*
 yy. Plants hoary-pubescent, never villous; petioles longer than the leaf blades; plants of the deserts of California and adjacent Nevada.....32. *L. mohavense*
 xx. Plants short-caulescent, rarely acaulescent, mostly taller, up to 5 dm. tall.
 (d). Petals glabrous; fruit narrowly oblong, sparingly pubescent with long hairs.....34. *L. macrocarpum*
 (dd). Petals tomentose; fruit ovate-oblong to orbicular, densely pubescent.
 (m). Pedicels mostly longer than the mature fruit; wings broader than the body, membranous, thinly pubescent to glabrate....31. *L. dasycarpum*
 (mm). Pedicels mostly shorter than the mature fruit; wings narrower than to equalling the body, somewhat thickened, tomentose..33. *L. tomentosum*
 MM. Ovaries and fruit glabrous.
 T. Involucel bracts absent.
 Z. Foliage and peduncles pubescent; umbels 2–7-rayed.....
38. *L. Engelmannii*
 ZZ. Foliage and peduncles glabrous, rarely scaberulent; umbels 5–16-rayed.
 k. Flowers white; fruiting pedicels 6–10 mm. long; plants of Mariposa Co., California.....35. *L. Congdoni*
 kk. Flowers creamy-white to yellow; fruiting pedicels less than 6 mm. long except in 39a.
 z. Leaf segments filiform, 3–8 mm. long; plants of the southern Sierra Nevada Mts., California.....
37. *L. Torreyi*
 zz. Leaf segments ovate, 1–2 mm. long; plants of the northern coast ranges and Cascades, British Columbia to Oregon.
 q. Flowers creamy-white; pedicels 1–6 mm. long.....
39. *L. angustatum*
 qq. Flowers lemon-yellow; pedicels 8–16 mm. long.....
39a. *L. angustatum* var. *flavum*
 TT. Involucel bracts present.
 a. Involucel bracts obovate, sometimes connate.
 m. Plants usually with several stem leaves, pilose...22. *L. Vaseyi*
 mm. Plants without or with one stem leaf, glabrous to pubescent.
 a. Plants glabrous or slightly pubescent; flowers yellow.
 r. Plants caespitose; leaflets crowded; plants of montane Montana to Oregon.....18. *L. montanum*
 rr. Plants not caespitose; leaflets distinct; plants not montane, of the coast ranges, California.
 (e). Wing margins smooth.....23. *L. caruifolium*

- (ee). Wing margins denticulate.....
.....23a. *L. caruifolium* var. *denticulatum*
- aa. Plants scaberulent to densely pubescent; flowers white.
 - s. Plants soft-puberulent; involucl bracts distinct; fruiting rays subequal; plants of the Great Plains and eastern foothills of the Rocky Mts.....30. *L. orientale*
 - ss. Plants pubescent; involucl bracts connate, sometimes reduced; fruiting rays unequal; plants of the Great Basin.
- (f). Wings narrower than the body, dorsal ribs inconspicuous.....24a. *L. nevadense* var. *Parishii*
- (ff). Wings broader than the body, dorsal ribs conspicuous.....24b. *L. nevadense* var. *pseudorientale*
- aa. Involucl bracts filiform to linear-lanceolate, never obovate.
 - n. Involucl bracts more or less tomentose or villous.
 - b. Flowers white; involucl bracts distinct, equalling to greatly exceeding the flowers.
 - t. Wings narrower than to equalling the body.....
.....34. *L. macrocarpum*
 - tt. Wings broader than the body.....
.....34a. *L. macrocarpum* var. *ellipticum*
 - bb. Flowers yellow; involucl bracts connate to above the middle, equalling the flowers.....29. *L. daucifolium*
 - nn. Involucl bracts glabrous or minutely and sparingly roughened.
 - c. Plants more or less pubescent.
 - u. Flowers yellow; plants mostly low, less than 3 dm. tall; plants of the Great Basin.
 - (g). Involucl bracts distinct; fruiting pedicels 5-10 mm. long; wings about half the width of the body; oil tubes several in the intervals.....
.....27. *L. juniperinum*
 - (gg). Involucl bracts connate at the base; fruiting pedicels 4-6, rarely 10, mm. long; wings nearly as broad as the body; oil tubes solitary in the intervals.
 - (n). Fruit oblong to oblong-ovate, 9-13 mm. long
.....25a. *L. Plummerae* var. *Sonnei*
 - (nn). Fruit ovate, 8 mm. long.....
.....25b. *L. Plummerae* var. *Austinae*
 - uu. Flowers white; plants usually taller, up to 4.5 dm. tall.
 - (h). Plants soft-puberulent; rays subequal; plants of the Great Plains and eastern foothills of the Rocky Mts.....30. *L. orientale*
 - (hh). Plants pubescent; rays unequal; plants of the Great Basin.
 - (o). Wings narrower than the body, dorsal ribs inconspicuous.....24a. *L. nevadense* var. *Parishii*

- (oo). Wings broader than the body, dorsal ribs conspicuous...24b. *L. nevadense* var. *pseudorientale*
- cc. Plants glabrous or occasionally slightly scaberulent, never pubescent; flowers yellow or purple.
- w. Plants acaulescent or with a pseudoscape.
- (i). Leaflets filiform, mostly elongated, up to 4.5 cm. long; flowers purple; plants of Napa Co., California.....23c. *L. caruifolium* var. *purpureum*
- (ii). Leaflets linear to ovate-oblong, rarely filiform, usually shorter, up to 11 mm. long; flowers yellow; plants of the Great Basin.
- (p). Plants up to 6.1 dm. tall; leaves broadly ovate, the blades large, 10.5 cm. or longer; involucl bracts shorter than the flowers.....40. *L. Grayi*
- (pp). Plants low, up to 3 dm. tall; leaves ovate to oblong, the blades smaller, less than 10.5 cm. long; involucl bracts equalling the flowers.
- (r). Leaves minutely papillose above; wings one-half to equalling the body, oil tubes solitary in the intervals.....41. *L. serpentinum*
- (rr). Leaves glabrous above; wings less than half the width of the body, oil tubes 3-6 in the intervals.....42. *L. Donnellii*
- ww. Plants short-caulescent.
- (j). Leaflets remote, mostly elongated, up to 45 mm. long; plants of the western foothills of the Sierra Nevada Mts., California.....23b. *L. caruifolium* var. *marginatum*
- (jj). Leaflets crowded, shorter, up to 11 mm. long.
- (q). Petioles entirely sheathing; fruit acute at the apex; plants of east-central California and adjacent Nevada.....25. *L. Plummerae*
- (qq). Petioles partially sheathing; fruit rounded at the apex.
- (s). Involucl bracts sparingly hispid; oil tubes 3 in the intervals; plants of southwestern Oregon.....43. *L. Nelsonianum*
- (ss). Involucl bracts glabrous; oil tubes solitary in the intervals; plants of the Great Basin.....40. *L. Grayi*
- HH. Leaves with mostly few divisions, ternately or pinnately divided, the leaflets mostly remote.
- N. Plants acaulescent or short-caulescent; leaves 1-2-pinnate, rarely 3-pinnate.
- U. Foliage variously pubescent.
- b. Leaves entirely pubescent.
- o. Ovaries and fruit pubescent.....45. *L. oreganum*

- oo. Ovaries and fruit glabrous.
 - d. Leaves pinnate; plants less than 1 dm. tall..44. *L. minimum*
 - dd. Leaves mostly 2-3-pinnate; plants 1 dm. or more tall.
 - y. Pedicels 6-17 mm. long; wings equalling to broader than the body; plants of southwestern Colorado....
.....47. *L. Eastwoodae*
 - yy. Pedicels (2?)-9 mm. long; wings less than half the width of the body; plants of southwestern Utah....
.....48. *L. scabrum*
 - bb. Leaves glabrous except for ciliolate margins....49. *L. ciliolatum*
- UU. Foliage glabrous.
 - c. Leaves 2-3-pinnate.
 - p. Plants short-caulescent, 1.2-2.5 dm. tall; involucre bracts foliaceous, ovate-lanceolate; fruit ovate, 5-8 mm. long
.....50. *L. concinnum*
 - pp. Plants acaulescent, 1.5-5 dm. tall; involucre bracts linear; fruit oblong, 7-13 mm. long.
 - e. Peduncles equalling to somewhat exceeding the leaves; pedicels 10-17 mm. long; wings equalling or somewhat broader than the body.....51. *L. Parryi*
 - ee. Peduncles usually greatly exceeding the leaves; pedicels 3-7 mm. long; wings about half the width of the body.
 - z. Leaflets remote, 10-50 mm. long; plants tall, stout....
.....52. *L. Nuttallii*
 - zz. Leaflets crowded, 1-4 mm. long; plants lower, slender.
 - (k). Leaves bipinnate, pinnae few, remote.....
.....40a. *L. Grayi* var. *depauperatum*
 - (kk). Leaves tripinnate, pinnae many, crowded.....
.....53. *L. Hallii*
 - cc. Leaves pinnate, rarely bipinnate.
 - q. Plants less than 1 dm. tall; leaf blades less than 2.5 cm. long.
 - f. Plants acaulescent, 1-3.5 cm. tall; rays 3-12 mm. long; plants of southwestern Utah.....44. *L. minimum*
 - ff. Plants caulescent with one stem leaf, 5-8 cm. tall; rays 1.5-2 mm. long; plants of the Wallowa Mts., Oregon
.....46. *L. Greenmanii*
 - qq. Plants more than 1 dm. tall; leaf blades more than 2.5 cm. long.
 - j. Leaflets ovate, crowded; fruit 13-16 mm. long; plants of high Cascade Mts., Oregon.....54. *L. Martindalei*
 - jj. Leaflets linear to lanceolate, remote; fruit less than 12 mm. long; plants of the Great Basin mountains.
 - (a). Umbels 3-6-rayed; pedicels 4-10 mm. long.....
.....52a. *L. Nuttallii* var. *alpinum*
 - (aa). Umbels 4-11-rayed; pedicels 1-4 mm. long.
 - (l). Leaflets lanceolate, 2-6 mm. broad; central rays sterile.....55. *L. latilobum*

- (ll). Leaflets linear, about 1 mm. broad; central rays fertile.....56. *L. megarrhizum*
- NN. Plants mostly caulescent, tall; leaves ternate-pinnately or quinate-pinnately divided.
- V. Plants variously pubescent.
- d. Ovaries and young fruit glabrous.
- r. Leaflets linear; fruit 7–14 mm. long.
- k. Leaves biternate; involucl bracts shorter than the pedicels; fruit 7–14 mm. broad, the wings equalling to broader than the body.....57. *L. simplex*
- kk. Leaves ternate-pinnate; involucl bracts equalling the pedicels; fruit 3–5 mm. broad, the wings narrower than the body.....58. *L. triternatum*
- rr. Leaflets ovate-lanceolate to obovate; fruit 13–22 mm. long.....58a. *L. triternatum* var. *anomalum*
- dd. Ovaries and young fruit pubescent.
- s. Leaves biternate; wings equalling to broader than the body.....57a. *L. simplex* var. *leptophyllum*
- ss. Leaves ternate-pinnate; wings narrower than the body.
- m. Leaflets elongated, up to 14.5 cm. long.
- (b). Leaflets linear; involucl bracts few or absent....
.....58d. *L. triternatum* var. *alatum*
- (bb). Leaflets linear to ovate-lanceolate; involucl bracts several, equalling the pedicels.....
.....58b. *L. triternatum* var. *macrocarpum*
- mm. Leaflets shorter, up to 2.2 cm. long.
- (c). Plants low, up to 3.5 dm. tall; pedicels 1–4 mm. long; fruit 6–8 mm. long.....
.....58c. *L. triternatum* var. *brevifolium*
- (cc). Plants 9–21 dm. tall; pedicels 6–17 mm. long; fruit 24–28 mm. long....61a. *L. Suksdorfii* var. *Thompsonii*
- VV. Plants glabrous or rarely slightly scaberulent, never pubescent.
- e. Plants 9–21 dm. tall; fruit 15–32 mm. long.....61. *L. Suksdorfii*
- ee. Plants 1–5.6 dm. tall; fruit 6–13 mm. long.
- t. Stems simple; leaflets filiform to linear; fruit never reflexed.
- n. Plants 1–2.2 dm. tall; leaflets few; involucl bracts present; fruit 11–13 mm. long.....59. *L. Cusickii*
- nn. Plants 2.5–3.7 dm. tall; leaflets many; involucl bracts usually absent; fruits 6–10 mm. long....60. *L. laevigatum*
- tt. Stems few-branched; leaflets linear-lanceolate to oblanceolate; fruit usually reflexed.....62. *L. Brandegei*
- AA. Peduncles swollen at the apex.....63. *L. nudicaule*

1. *Lomatium lucidum* (Nutt.) Jepson, Econ. Pl. Calif. 119. 1924; Madroño 1: 149. 1924.

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Cogswellia lucida (Nutt.) Jones, Contr. Western Bot. 12: 31. 1908.

C. Hassei (Coult. & Rose) Jones, Contr. Western Bot. 12: 31. 1908.

Plants short-caulescent, 2.6–5 dm. tall, glabrous, from a long slender tap-root; leaves ovate-oblong to obovate, the blades 4.5–9 cm. long, 1–2-ternate, the leaflets deltoid to cuneate, 15–70 mm. long, 10–65 mm. broad, entire or 3-lobed, regularly and sharply dentate, the petioles 2.5–14 cm. long, sheathing below; fruiting peduncles exceeding the leaves, stout; umbels 10–20-rayed, the fruiting rays 2–8.5 cm. long, spreading; involucre bracts linear-lanceolate, acuminate, distinct or connate below, about equalling the yellow flowers; umbellets about 20-flowered, the fruiting pedicels 7–17 mm. long; fruit suborbicular to broadly elliptical, 6–15 mm. long, 5–15 mm. broad, emarginate especially at the base, the wings thick, broader than the body, the oil tubes solitary in the intervals, 2–4 on the commissure.

TYPE: *Nuttall*, "woods of San Diego," California (Ph).¹

DISTRIBUTION: Coast ranges, southern California.

TYPICAL SPECIMENS: CALIFORNIA: foothills of Sierra Madre, Los Angeles Co., *Hasse* (M, NY, UC, US TYPE of *P. Hassei*); open rocky ridges, S. Fork, La Tuna Canyon, Verdugo Range, Los Angeles Co., *Ewan 4173* (M, UC).

¹ The following abbreviations have been used in citations to indicate the different herbaria from which material has been obtained for study:

Cal—California Academy of Sciences.

Cl—Herbarium of Ira W. Clokey, South Pasadena, California.

F—Field Museum of Natural History.

G—Gray Herbarium, Harvard University.

Garrett—Herbarium of A. O. Garrett, Salt Lake City, Utah.

Jepson—Herbarium of W. L. Jepson, University of California.

M—Missouri Botanical Garden.

NY—New York Botanical Garden.

Ph—Academy of Natural Sciences, Philadelphia.

Po—Pomona College.

Sta. Barb.—Santa Barbara Museum.

Th—Herbarium of J. W. Thompson, Seattle, Washington.

UC—University of California.

UM—University of Montana.

UO—University of Oregon.

US—United States National Herbarium.

2. *Lomatium repostum* (Jepson) Mathias, comb. nov.

Lomatium lucidum (Nutt.) Jepson var. *repostum* Jepson, Madroño 1: 149. 1924.

Plants acaulescent, 1.5–3.6 dm. tall, glabrous, from a long slender, sometimes branching tap-root; leaves broadly ovate, the blades 5–15 cm. long, 1–2-ternate or ternate-pinnate, the leaflets ovate to subflabellate, 1–4 cm. long, 1–6 cm. broad, regularly and sharply dentate, rarely shallowly lobed, the petioles 3–17 cm. long, shortly sheathing below; peduncles exceeding the leaves; umbels 8–20-rayed, the fruiting rays 3–8 cm. long, spreading; involucre bracts lanceolate, subacuminate, dimidiate, usually connate below, about equalling the greenish-yellow flowers; umbellets about 20-flowered, the fruiting pedicels 8–12 mm. long; fruit broadly elliptical, 10–15 mm. long, 7–12 mm. broad, emarginate at base and apex, the wings thin, about equalling to much broader than the body, the oil tubes 1–3 in the intervals, 4–6 on the commissure.

TYPE: *Jepson*, near Collin's Spr., Vaca Mts., California.

DISTRIBUTION: Inner coast ranges, northern Napa and southern Lake counties, California.

SPECIMENS EXAMINED: CALIFORNIA: East slope Cobb. Mt., *Baker 2287a* (UC); edge of the "Crater Country," Napa Co., *Howell 5358* (UC); trail from Mt. St. Helena Inn to summit of Mt. St. Helena, about 2800 feet, *Mathias 1286* (UC); 7–8 miles from Lower Lake along road to Knoxville, Lake Co., *Mathias 1293, 1319* (UC).

3. *Lomatium Howellii* (Wats.) Jepson, Fl. Calif. 2¹: 637. 1936.

Peucedanum Howellii Wats. Proc. Am. Acad. 20: 369. 1885.

Euryptera Howellii (Wats.) Coult. & Rose, Contr. U. S. Nat. Herb. 7: 243. 1900.

Cogswellia Howellii (Wats.) Jones, Contr. Western Bot. 12: 31. 1908.

Plants acaulescent or short-caulescent, 2.5–4 dm. tall, glabrous, from a long slender branching tap-root; leaves obovate, the blades 4.5–11 cm. long, ternate, then 1–2 pinnate, the leaflets deltoid, 10–25 mm. long, 8–30 mm. broad, entire to 3-lobed, sharply and regularly dentate, the petioles 2.5–7.5 cm. long, sheathing below; peduncles exceeding the leaves; umbels 10–

15-rayed, the fruiting rays spreading, 2.5–5.5 cm. long; involucre bracts several, lanceolate to filiform, about equalling the yellow flowers; umbellets about 20-flowered, the fruiting pedicels 8–12 mm. long; fruit suborbicular, 7–11 mm. long, 7–11 mm. broad, deeply emarginate at base and apex, the wings about equalling the body, the oil tubes 2–3 in the intervals, 9 on the commissure.

TYPE: *Howell*, near Waldo, Josephine Co., Oregon, June 1884 (NY).

DISTRIBUTION: Southwestern Oregon and adjacent California.

SPECIMENS EXAMINED: OREGON: dry rocky ground, 10 miles s. w. of Waldo, Josephine Co., *Thompson* 4610 (M); Waldo, *Howell* s. n. (NY), 241, 302 (US), 1153 (M); high hot hillsides, 5 miles down Deer Creek from Selma, *Henderson* 5864 (M); 8 mi. south of Waldo, *Piper* 6105 (US); dry hillsides of the Siskiyou Mts. on Waldo-Crescent City road, *Cusick* 2930a (US). CALIFORNIA: Sesquite, French Hill, Del Norte Co., *Eastwood* 2207 (US).

4. *Lomatium parvifolium* (Hook. & Arn.) Jepson, Madroño 1: 150. 1924; Man. Fl. Pl. Calif. 720. 1925.

Ferula parvifolia Hook. & Arn. Bot. Beechey Voy. 348. 1840.

Peucedanum parvifolium (Hook & Arn.) Torr. & Gray, Fl. N. Am. 1: 628. 1840.

P. californicum Coult. & Rose, Bot. Gaz. 13: 143. 1888, not Nutt. (1840).

Euryptera parvifolia (Hook & Arn.) Coult. & Rose, Contr. U. S. Nat. Herb. 7: 241. 1900.

Cogswellia parvifolia (Hook. & Arn.) K.-Pol. Bull. Soc. Nat. Mosc. 1915, n.s. 29: 177. 1916.

Plants short-caulescent, 1.5–4 dm. tall, glabrous, from a long tap-root; leaves oblong, the blades 3–10 cm. long, ternate (rarely with confluent segments), then 1–2-pinnate, the leaflets lanceolate to cuneate, 8–24 mm. long, 7–15 mm. broad, irregularly and sharply pinnatifid-incised, the petioles 3–15 cm. long, shortly sheathing, purplish; peduncles exceeding the leaves; umbels 8–14-rayed, the fruiting rays subequal, 0.8–2.5 cm. long, spreading; involucre bracts linear-lanceolate to filiform, about equalling the yellow flowers; umbellets 14–20-flowered, the fruiting pedicels 3–6 mm. long; fruit orbicular to oblong, 7–10 mm. long, 6–10 mm. broad, emarginate at base and apex, the wings broader than the body, the oil tubes 1–2, mostly 1, in the dorsal intervals, 2–3 in the lateral intervals, 4–6 on the commissure.

TYPE: *Douglas*, California, probably near Monterey.

DISTRIBUTION: Coastal California, Monterey Co. to San Luis Obispo Co.

TYPICAL SPECIMENS: CALIFORNIA: Del Monte, Monterey Co., *Heller* 8420 (M, NY, US); Monterey, *Elmer* 4841 (M, NY); Pacific Grove, *Heller* 6735 (M, NY, Po, UC, US).

4a. *Lomatium parvifolium* (Hook. & Arn.) Jepson var. *pallidum* (Coult. & Rose) Jepson, Madroño 1: 150. 1924.

Euryptera pallida Coult. & Rose, Contr. U. S. Nat. Herb. 7: 242. 1900.

Cogswellia pallida (Coult. & Rose) Jones, Contr. Western Bot. 12: 31. 1908.

Similar to the species but the foliage paler; rays 3–6.5 cm. long, the pedicels 7–17 mm. long.

TYPE: *Vasey* 232, Santa Lucia Mts., California, July 1880 (US TYPE, Po).

DISTRIBUTION: San Luis Obispo Co., California.

SPECIMENS EXAMINED: CALIFORNIA: School Canyon, San Luis Obispo Co., *Condit* (UC); Jolon, *T. S. Brandege* (UC).

5. *Lomatium insulare* (Eastw.) Munz, Man. So. Calif. Bot. 358. 1935.

Peucedanum insulare Eastw. Proc. Calif. Acad. III, 1: 106. 1898.

Euryptera insularis (Eastw.) Coult. & Rose, Contr. U. S. Nat. Herb. 7: 243. 1900.

Cogswellia insularis (Eastw.) Jones, Contr. Western Bot. 12: 31. 1908.

Plants acaulescent, 1–4(?) dm. tall, glabrous, from a long stout tap-root; leaves ovate to obovate, the blades 6–9 cm. long, 2–3-ternate to biquinate, then pinnate, the leaflets oblong to ovate-oblong, cuneate, 4–14 mm. long, 2–8 mm. broad, irregularly pinnatifid, the petioles 2.5–3 cm. long, sheathing below; fruiting peduncles stout, exceeding the leaves; umbels 15–20-rayed, the fruiting rays subequal, 3.5–8 cm. long, spreading; involucre bracts filiform, exceeding the yellow flowers; umbellets many-flowered, the fruiting pedicels 6–12 mm. long; fruit oblong-ovate, 12–15 mm. long, 7–10 mm. broad, more or less emarginate at base and apex, the wings thick, about equalling the body, the oil tubes 2 in the intervals, 4 on the commissure, rarely 1 in the wings.

TYPE: *Trask*, sand cliffs overhanging briny arroyas, "San Nicholas Island," California, April 1897.

DISTRIBUTION: Known only from the type locality.

SPECIMENS EXAMINED: CALIFORNIA: San Nicolas Island, *Howell* 8207 (Cal, M, UC), *Trask* 51 (NY, US), 52 (M).

6. *Lomatium rigidum* (Jones) Jepson, Fl. Calif. 2¹: 637. 1936.

Cogswellia rigida Jones, Contr. Western Bot. 13: 11. 1910.

Plants acaulescent or short-caulescent, 2.5–4 dm. tall, glabrous, from a cluster of dried leaf sheaths; leaves oblong, the blades 8–12 cm. long, bipinnate (the lower pinnae elongated, appearing ternate), the leaflets ovate to cuneate, 10–20 mm. long, 5–10 mm. broad, sharply pinnatifid, the lobes with acerose or spinulose teeth, the petioles 5–10 cm. long, shortly sheathing below; peduncles exceeding the leaves; umbels 10–20-rayed, the fruiting rays subequal, 2.5–5 cm. long, spreading; involucre bracts conspicuous, lanceolate, acuminate, about equalling the pedicels, reflexed in fruit; flowers yellow, the fruiting pedicels 5–10 mm. long; fruit ovate to oblong, 7–9 mm. long, 5–7 mm. broad, emarginate at base, somewhat rounded at apex, the wings less than one-half the width of the body; oil tubes 3 in the intervals, about 6 on the commissure, the calyx teeth conspicuous especially in the young fruit.

TYPE: *Hall and Chandler 7225*, rocky point north of the town, Big Pine, Inyo Co., California, 4000 feet, 30 May 1906 (Po, Jepson).

DISTRIBUTION: Eastern slopes of the Sierras, Inyo Co., California, 4000 to 10,000 feet.

SPECIMENS EXAMINED: CALIFORNIA: Owen's Valley, *Austin 447a* (US); Andrew's Camp, *Davidson 2738* (US), *K. Brandegee* (Jepson); Big Pine Creek, *Hoffmann* (Sta. Barb.).

7. *Lomatium Gormanii* (Howell) Coult. & Rose, Contr. U. S. Nat. Herb. 7: 208. 1900.

Peucedanum Gormanii Howell, Fl. N.W. Am. 1: 252. 1898 (April 1).

P. confusum Piper, Erythea 6: 29. 1898 (April 10).

P. Watsoni Coult. & Rose, in part, acc. to Howell (*loc. cit.* 1898).

Cogswellia Gormanii (Howell) Jones, Contr. Western Bot. 12: 33. 1908.

Plants acaulescent, 1–1.5 dm. tall, from a shallow globose tuber up to 2.5 cm. in diameter, covered with fascicles of rootlets; leaves broadly oblong, the blades 3–5.5 cm. long, ternate, then 1–2-pinnate, the leaflets oblong to linear, 2–13 mm. long, about 1 mm. broad, acute, glabrous or sparingly puberulent, the petioles 2.5–7 cm. long, scarious, sheathing throughout; peduncles exceeding the leaves, glabrous or sparingly puberu-

lent; umbels 4–10-rayed, the rays unequal, 0.6–3 cm. long; involucler bracts absent or few, setaceous, scarious-margined, exceeding the pedicels; umbellets 10–20-flowered, the flowers white, the anthers purple, the fruiting pedicels 0.5–3 mm. long; fruit ovate, 5–7 mm. long, 4–5 mm. broad, puberulent, the wings about half the width of the body, the oil tubes 3–4 in the intervals, 4–6 on the commissure.

TYPE: *Howell*, "high hills opposite the Dalles," probably Klickitat Co., Washington.

DISTRIBUTION: Central and southeastern Washington, central Oregon, and Idaho.

TYPICAL SPECIMENS: WASHINGTON: Pullman, *Elmer* 73 (M, NY, US). OREGON: hills near Pendleton, *Cusick* 3411 (M, NY in part).

A form, **Lomatium Gormanii** (Howell) Coult. & Rose forma **purpureum** St. John, Proc. Biol. Soc. Wash. 41: 196. 1928 (*Cogswellia Gormanii* (Howell) Jones forma *purpurea* St. John, Fl. S.E. Wash. & Adj. Ida. 290. 1937) has been described having the petals bright rose-purple. The type collection is by *St. John & Pickett* 3714, rocky hillside, Pullman, Whitman Co., Washington, March 5, 1926.

8. **Lomatium Piperi** Coult. & Rose, Contr. U. S. Nat. Herb. 7: 211. 1900.

Cogswellia Piperi (Coult. & Rose) Jones, Contr. Western Bot. 12: 33. 1908.

Plants acaulescent or short-caulescent, 1–2.5 dm. tall, glabrous or with somewhat puberulent foliage, from a small globose, sometimes deep-seated tuber; leaves oblong-ovate, the blades 3–7.5 cm. long, ternate, then tripinnate, the leaflets remote, linear, 3–30 mm. long, 1–2 mm. broad, obtuse to acute, the petioles 3.5–10 cm. long, sheathing below; peduncles exceeding the leaves; umbels 3–20-rayed, the rays unequal, 1–6 cm. long, spreading; involucler bracts absent or few, inconspicuous, linear, shorter than the white flowers; umbellets 6–13-flowered, the anthers purple, the fruiting pedicels absent or less than 2 mm. long; fruit ovate to oblong, 5–9 mm. long, 3–4 mm. broad, the wings half as broad as the body, the oil tubes 1–8 in the intervals, 2–4 on the commissure.

TYPE: *Vasey*, Ellensburg, "Spokane County" (Kittitas Co.), Washington, May 1889 (US).

DISTRIBUTION: Central Washington to northern California, east to western Idaho.

TYPICAL SPECIMENS: WASHINGTON: Goldendale, Klickitat Co., *Thompson 8188* (M, Th); Maryhill, Klickitat Co., *Thompson 8185* (M, Th). OREGON: Lookout Mountain, Crook Co., *Cusick 1687* (M, UC, US). CALIFORNIA: Yreka, *Butler 578* (Po, UC), *1115* (Po), *1130* (Po, UC).

9. *Lomatium orogenioides* (Coult. & Rose) Mathias, comb. nov.

Leibergia orogenioides Coult. & Rose, Contr. U. S. Nat. Herb. **3**: 575. 1896.

Cogswellia orogenioides (Coult. & Rose) Jones, Contr. Western Bot. **12**: 33. 1908.

Plants acaulescent, slender, 1–4 dm. tall, from a globose tuber, 6–12 mm. in diameter; leaves oblong, the blades 5–11 cm. long, glabrous, 2–3-ternate, the leaflets few, filiform, 10–45 mm. long, 1–2 mm. broad, acute, minutely apiculate, petioles 2–7 cm. long, usually sheathing about to the middle; peduncles exceeding the leaves; umbels 3–10-rayed, the rays glabrous or sparsely scaberulent, unequal, 3–15 cm. long, ascending; involucre bracts few, linear, acute, exceeding the pedicels; umbellets about 10-flowered, the flowers white, the fruiting pedicels 1–3 mm. long; fruit linear, 8–10 mm. long, 1–1.5 mm. broad, constricted toward the apex, the wings narrow to almost obsolete, the oil tubes small, solitary in the intervals, 2 on the commissure.

TYPE: *Leiberg 1027*, "Santianne Creek bottoms, Coeur d'Alene Mts., Idaho," 950 m., 24 June 1895 (US).

DISTRIBUTION: Northern Idaho and northeastern Washington.

SPECIMENS EXAMINED: WASHINGTON: damp low bank of Latah Creek east of Spangle, Spokane Co., *Suksdorf 8645* (Th).

10. *Lomatium farinosum* (Geyer) Coult. & Rose, Contr. U. S. Nat. Herb. **7: 210. 1900, where the name-bringing synonym is erroneously ascribed to Hook.**

Peucedanum farinosum Geyer, ex Hook. Lond. Journ. Bot. **6**: 235. 1847.

Ferula farinosa Geyer, ex Hook. Lond. Journ. Bot. **6**: 235. 1847, nom. nud. in synonym.

Cogswellia farinosa (Geyer) Jones, Contr. Western Bot. **12**: 33. 1908.

Plants short-caulescent, 1.5–3 dm. tall, glabrous, from a globose tuber, 1–2 cm. in diameter; leaves oblong, the blades 4–10 cm. long, biternate, the leaflets linear, 1.5–8 cm. long, 1–3 mm. broad, acute, narrowed toward the base, the petioles 1–7 cm.

long, sheathing at the base; peduncles exceeding the leaves; umbels 3–12-rayed, the rays unequal, 1–7 cm. long, weak, ascending; involucler bracts one to few, linear, acuminate, sometimes scarious, deciduous, shorter than the pedicels; umbellets 12–15-flowered, the flowers white, the fruiting pedicels 6–17 mm. long, weak; fruit linear-oblong, 5–6 mm. long, about 3 mm. broad, the wings narrow, about half the width of the body; the oil tubes several in the intervals.

TYPE: *Geyer 325*, “on an isolated rock in the Coeur d’Aline Mountains on wet clay,” Idaho.

DISTRIBUTION: Western Idaho and adjacent Washington.

TYPICAL SPECIMENS: IDAHO: Lewiston, Nez Perce Co., *Heller & Heller 3036* (M, US). WASHINGTON: near Rock Creek, Spokane Co., *Sandberg & Leiberg 131* (M, Po, UC, US); Almata, *Piper 2794* (Po, US).

11. *Lomatium Geyeri* (Wats.) Coult. & Rose, Contr. U. S. Nat. Herb. 7: 209. 1900.

Peucedanum ambiguum acc. to Hook. Lond. Journ. Bot. 6: 235. 1847, not Nutt. (1840).

P. Geyeri Wats. Bibl. Ind. 1: 428. 1878; Proc. Am. Acad. 14: 293. 1879.

P. evittatum Coult. & Rose, Bot. Gaz. 14: 277. 1889.

Cogswellia Geyeri (Wats.) Jones, Contr. Western Bot. 12: 33. 1908.

Plants acaulescent, 2–4.5 dm. tall, glabrous, from a shallow or deep-seated small tuber less than 1 cm. in diameter; leaves ovate-oblong, the blades 7–9 cm. long, ternate, then pinnate, the leaflets few, remote, linear, 10–50 mm. long, 1.5–3 mm. broad, apiculate, the petioles 7–13 cm. long, purplish, shortly sheathing below; peduncles exceeding the leaves; umbels 5–20-rayed, the rays unequal, 1–6 cm. long, spreading to ascending; involucler bracts more or less connate, linear-lanceolate, acuminate, scarious-margined, about equalling the white flowers; umbels several-flowered, anthers purple, the fruiting pedicels 2–5 mm. long; fruit ovate-oblong, 6–13 mm. long, 4–5 mm. broad, the wings narrower than the body, the oil tubes small, obscure, 2–6 in the intervals, about 6 on the commissure.

TYPE: *Geyer 458*, “sandy woods and plains, Upper Columbia River,” April, May.

DISTRIBUTION: Eastern British Columbia to central Washington.

TYPICAL SPECIMENS: WASHINGTON: along Beverly Creek, Kittitas Co., *Thompson 9594* (Po, Th); rocky ledges near Salmon La Sac, Kittitas Co., *Thompson 10465* (Po, Th); Tumwater Mt., Wenatchee Mts., Chelan Co., *Thompson 6492* (M, Th), *10499* (Po, Th).

12. *Lomatium Hendersoni* Coult. & Rose, Contr. U. S. Nat. Herb. 7: 209. 1900.

Peucedanum Hendersoni Coult. & Rose, Bot. Gaz. **13**: 210. 1888; Rev. N. Am. Umbell. 56. 1888.

Cogswellia Hendersoni (Coult. & Rose) Jones, Contr. Western Bot. **12**: 33. 1908.

Plants acaulescent, low, mostly glabrous, from a shallow constricted tuber 1–2.5 cm. in diameter; leaves ternate, then bipinnate, the leaflets short, obtuse; umbels 2–5-rayed, the rays equal, 1–2 cm. long; involucre bracts linear, acuminate, scarious, distinct; umbellets few-flowered, the flowers white, the pedicels 3–4 mm. long; fruit ovate, 5 mm. long, 4 mm. broad, glabrous, the wings thickish, less than half as broad as the body, more or less involute, the oil tubes solitary in the intervals, 2 on the commissure.

TYPE: *Howell B* in part, on high hilltops, John Day Valley, Oregon, May 1882. Associated with the type is *Howell 410*, Lost Valley, June 1882.

DISTRIBUTION: Known only from the type collections.

This species has not been seen and the description is an adaptation from the publications of Coulter and Rose.

13. *Lomatium Canbyi* Coult. & Rose, Contr. U. S. Nat. Herb. 7: 210. 1900.

Peucedanum Canbyi Coult. & Rose, Bot. Gaz. **13**: 78. 1888; Rev. N. Am. Umbell. 56. 1888.

Cogswellia Canbyi (Coult. & Rose) Jones, Contr. Western Bot. **12**: 33. 1908.

Plants acaulescent, 1.5–2 dm. tall, glabrous, from a thick, more or less elongated rootstock ending in a globose tuber 1–2.5 cm. in diameter; leaves oblong-ovate, the blades 7–9 cm. long, ternate, then bipinnate, the leaflets distinct, linear, 4–5 mm. long, about 1 mm. broad, obtuse, mucronulate, the petioles 4–6 cm. long, forming a conspicuous scarious, purple-veined sheath; peduncles solitary, exceeding the leaves; umbels 12–17-rayed, the rays subequal, 2.7–5.5 cm. long, spreading; involucre bracts linear, acute to subacuminate, about equalling the white flowers; umbellets 13–16-flowered, the fruiting pedicels 8–12 mm. long; fruit elliptic-oblong, 7–10 mm. long, 4–6

mm. broad, the wings narrower than the body, the oil tubes 1–2 in the intervals, 2–4 on the commissure.

TYPE: *Howell* 67, high ridges, E. Oregon, April 1880, May 1882.

DISTRIBUTION: Western Idaho, eastern Washington, and Oregon.

TYPICAL SPECIMENS: WASHINGTON: Klickitat Valley, *Howell* 1367 (M, UC, US). OREGON: *Cusick* 1834 (M, Po, UC, US); summit of Tygh Hill, Wasco Co., *Thompson* 4073 (M).

14. *Lomatium Watsoni* Coult. & Rose, Contr. U. S. Nat. Herb. 7: 211. 1900.

Peucedanum Watsoni Coult. & Rose, Bot. Gaz. 13: 209. 1888; Rev. N. Am. Umbell. 57. 1888.

Cogswellia Watsoni (Coult. & Rose) Jones, Contr. Western Bot. 12: 33. 1908.

Plants acaulescent, more or less puberulent, 0.8–1.5 dm. tall, from a deep-seated solitary oblong tuber, with clusters of rootlets on its surface; leaves oblong, the blades 1.5–3.5 cm. long, 2–4-pinnate, the leaflets crowded, linear, 1–5 mm. long, about 0.5 mm. broad, apiculate, the petioles 3–4.5 cm. long, sheathing partially or entirely, scarious; peduncles exceeding the leaves; umbels 1–9-rayed, the fruiting rays unequal, 0.5–2.5 cm. long, ascending; involucl bracts scarious, dimidiate, connate to near the apex, about equalling the yellow flowers; umbellets many-flowered, the fruiting pedicels obsolete to 1 mm. long; fruit ovate, 6–7 mm. long, about 3 mm. broad, puberulent, the wings less than half the width of the body, the oil tubes obscure, several in the intervals, about 6 on the commissure.

TYPE: *Howell*, Cimcoe Mts., Washington, 1881, is the first specimen cited in the original publication; in the Contr. U. S. Nat. Herb. 7: 212, the type is given by Coulter and Rose as *Howell* 830, on denuded hilltops near “Alkali,” Oregon, 20 May 1882.

DISTRIBUTION: Central and western Washington, and the Blue Mts., Oregon.

SPECIMENS EXAMINED: WASHINGTON: “Cimcoe Mountains,” *Howell* 180 (US); high hills opposite The Dalles, Klickitat Co., *Thompson* 11416 (Th); Yakima Region, *T. S. Brandege* 320 (UC). OREGON: near Alkali, *Howell* 830 (Th, UC, US); Trout Creek, Blue Mts., *Howell* (US).

15. *Lomatium leptocarpum* (Nutt.) Coult. & Rose, Contr. U. S. Nat. Herb. 7: 213. 1900.

Peucedanum leptocarpum Nutt. ex Torr. & Gray, Fl. N. Am. 1: 626. 1840, nom. nud. in synon.

- P. triternatum* (Pursh) Nutt. var. *leptocarpum* Torr. & Gray, Fl. N. Am. 1: 626. 1840.
P. bicolor Wats. Bot. King Exp. 129. 1871.
P. ambiguum Nutt. var. *leptocarpum* (Torr. & Gray) Coult. & Rose, Rev. N. Am. Umbell. 59. 1888.
Lomatium bicolor (Wats.) Coult. & Rose, Contr. U. S. Nat. Herb. 7: 237. 1900.
Peucedanum bicolor Wats. var. *gumbonis* Jones, Contr. Western Bot. 10: 55. 1902.
Cogswellia bicolor (Wats.) Jones, Contr. Western Bot. 12: 33. 1908.
C. leptocarpa (Nutt.) Jones, Contr. Western Bot. 12: 33. 1908.
Lomatium ambiguum (Nutt.) Coult. & Rose var. *leptocarpum* (Torr. & Gray) Jepson, Madroño 1: 159. 1924.

Plants short-caulescent, 1.5–5.5 dm. tall, glabrous to scaberulent, from elongated moniliform tuberous roots; leaves broadly obovate, the blades 9–14 cm. long, 1–2-ternate, then 2–4-pinnate, the leaflets filiform to linear, 0.5–45 mm. long, 0.1–2 mm. broad, mucronulate, the petioles 2.2–7 cm. long, entirely sheathing; peduncles exceeding the leaves; umbels 4–15-rayed, the rays unequal, 2–12 cm. long, suberect, strict; involucre bracts several, linear, acute, about equalling the yellow flowers; umbellets 10–16-flowered, the fruiting pedicels 2–7 mm. long; fruit narrowly oblong, 10–15 mm. long, 2–5 mm. broad, the wings less than half the width of the body, the oil tubes solitary in the intervals, 2–4 on the commissure.

TYPE: *Nuttall*, "Plains of the Oregon near the confluence of the Wahlamet," Oregon, July (Ph).

DISTRIBUTION: Northwestern Colorado to northeastern California, northern Idaho to the Grand Canyon, Arizona.

TYPICAL SPECIMENS: UTAH: Salt Lake City, *Jones* (M, NY, Po, US), *Watson* 467 (US, NY). OREGON: stony swales, *Cusick* 2381 (M, NY, Po, US); Paradise, Wallowa Co., *Cusick* 2414 (M, NY, US).

The type specimen in the herbarium of the Academy of Natural Sciences, Philadelphia, labelled *Nuttall*, "Wahlamet & Columbia plains," is a mixture of material. The fruit is true *L. leptocarpum*.

16. *Lomatium ambiguum* (Nutt.) Coult. & Rose, Contr. U. S. Nat. Herb. 7: 212. 1900.

Eulophus ambiguus Nutt. Journ. Acad. Phila. 7: 27. 1834.

Peucedanum ambiguum Nutt. ex Torr. & Gray, Fl. N. Am. 1: 626. 1840.

P. abrotanifolium Nutt. Journ. Acad. Phila. n.s. 1: 184. 1847.

P. tenuissimum Geyer, ex Hook. Lond. Journ. Bot. 6: 235. 1847.

Cogswellia ambigua (Nutt.) Jones, Contr. Western Bot. 12: 33. 1908.

Plants caulescent, 6–44 cm. tall, glabrous, solitary or clustered at the base, alternately few-branched above, the stems purplish, especially above, from tuberous somewhat moniliform roots or elongated tap-roots; leaves oblong-ovate, the blades 2.5–12 cm. long, the lower leaves mostly ternate, then once pinnate, the upper leaves 2–3-pinnate, the leaflets mostly distinct, linear, 3–50 mm. long, 1–4 mm. broad, acute, the petioles 1–6.5 cm. long, conspicuously sheathing at the base; peduncles 2–12 cm. long, the axillary umbels mostly sterile; umbels 5–17-rayed, the rays unequal, 15–80 mm. long; involucels absent; umbellets about 20-flowered, the flowers yellow, the fruiting pedicels 4–8 mm. long; fruit narrowly oblong, 8–10 mm. long, 1.5–3 mm. broad, glabrous, the wings very narrow, the oil tubes solitary in the intervals, 2 on the commissure.

TYPE: *Wyeth*, borders on "Flat-Head River, Oregon," Montana (Ph).

DISTRIBUTION: Western Montana and Wyoming to eastern British Columbia and the eastern slopes of the Cascade Mts., Washington, the Blue and Wallowa Mts., Oregon.

TYPICAL SPECIMENS: MONTANA: Flathead-Brackett Cr. Divide, *Blankinship* 221 (M, UM, US); Bridger Mts., *Rydberg & Bessey* 4623 (NY, UM, US). YELLOWSTONE NATIONAL PARK: Druid Peak, *A. & E. Nelson* 5782 (M, NY, US). WYOMING: Crandall Creek, *Rose* 274 (M, NY, US). IDAHO: Lewiston, Nez Perce Co., *Heller & Heller* 2995 (M, NY, UC, US). WASHINGTON: Pullman, *Elmer* 827 (M, NY, Po, US); Peshastin, *Sandberg & Leiberg* 481 (M, NY, UC, US).

17. *Lomatium Cous* (Wats.) Coult. & Rose, Contr. U. S. Nat. Herb. 7: 214. 1900.

Peucedanum Cous Wats. Proc. Am. Acad. 21: 453. 1886.

Cogswellia Cous (Wats.) Jones, Contr. Western Bot. 12: 33. 1908.

Plants acaulescent or short-caulescent, 2–2.5 dm. tall, from a globose, sometimes more or less elongated, tuber; leaves oblong to obovate, the blades 5.5–9.5 cm. long, mostly glabrous, ternate, then 2–3-pinnate or pinnately decomposed, the leaflets crowded, ovate to oblong, 1–5 mm. long, 1–2 mm. broad, mucronulate, the petioles 3–6 cm. long, sheathing to above the middle; peduncles exceeding the leaves, scaberulent; umbels 10–20-rayed, the rays unequal, 1–5 cm. long, spreading; in-

volucel bracts oblanceolate, shortly connate below, about equaling the yellow flowers; umbellets about 20-flowered, the fruiting pedicels 2–4 mm. long; fruit oblong-elliptic, 7–10 mm. long, 3–5 mm. broad, granular-roughened, the wings narrower than the body, the oil tubes usually solitary in the intervals, 4 on the commissure.

TYPE: *Howell 270*, John Day's Valley, eastern Oregon, May 1880.

DISTRIBUTION: Western Idaho, adjacent Washington, and Oregon.

SPECIMENS EXAMINED: IDAHO: about Lewiston, Nez Perce Co., *Heller & Heller 3052* (M, UC). WASHINGTON: Wawawai, Whitman Co., *Elmer 97* (M). OREGON: Laka, Blue Mts., *Henderson 400* (M); *Howell* (M); Juniper Mt., Malheur Co., Wallowa Hill, Union Co., *Cusick 2377* (M, Po); near Fossil, Wheeler Co., *Henderson 5514* (M); *Cusick 1837* (M, Po, UC); near Prairie City, Grant Co., *Henderson 5183* (M).

The Indian name for this plant is "cous." The roots are used for food.

18. *Lomatium montanum* Coult. & Rose, Contr. U. S. Nat. Herb. 7: 214. 1900.

Lomatium purpureum A. Nels. Bull. Torrey Bot. Club **28**: 226. 1901.

Peucedanum montanum (Coult. & Rose) Blankinship, Mont. Agric. Coll. Studies, Bot. **1**: 93. 1905.

Cogswellia montana (Coult. & Rose) Jones, Contr. Western Bot. **12**: 34, 36. 1908.

Plants acaulescent, 1–3 dm. tall, glabrous, caespitose from a thickened tap-root or a subglobose tuber; leaves mostly oblong, the blades 2.5–12 cm. long, ternate, then 2–3-pinnate, the leaflets crowded, oblong, 2–10 mm. long, 0.5–3 mm. broad, apiculate, the petioles 1.5–7 cm. long, sheathing to above the middle, purplish; peduncles exceeding the leaves; umbels 5–15-rayed, the fruiting rays unequal, 1–6.5 cm. long; involucel bracts conspicuous, obovate, distinct or united below, purplish; umbellets about 20-flowered, the fruiting pedicels 2–3 mm. long; fruit elliptic-oblong, 5–12 mm. long, 3–5 mm. broad, the wings narrower than to about equalling the body, the oil tubes 2–4 in the intervals, 6 on the commissure.

TYPE: *Rose 479*, mountain ridges in Yellowstone National Park, 19 August 1893 (US).

DISTRIBUTION: Mountains, western Montana and Wyoming, west to eastern Oregon.

TYPICAL SPECIMENS: MONTANA: Mt. Bridger, Mystic Lake, *Blankinship* 223 (M, UM, US). YELLOWSTONE NATIONAL PARK: Madison River, *Nelson & Nelson* 5496 (M, Po, US).

19. *Lomatium circumdatum* (Wats.) Coult. & Rose, Contr. U. S. Nat. Herb. 7: 213. 1900.

Peucedanum circumdatum Wats. Proc. Am. Acad. **22**: 474. 1887.

Cogswellia circumdata (Wats.) Jones, Contr. Western Bot. **12**: 33. 1908.

Plants caulescent, 1.5–3.5 dm. tall, glabrous to somewhat pubescent, from an elongated to subglobose tuber; leaves broadly oblong, the blades 5–6 cm. long, ternate, then 1–2-pinnate, the leaflets distinct, linear, 6–10 mm. long, 1–2 mm. broad, apiculate, the petioles 3–6 cm. long, entirely scarious sheathing in the stem leaves; peduncles exceeding the leaves; umbels 7–12-rayed, the fruiting rays ascending, 2–8 cm. long; involucre bracts conspicuous, obovate, acute, prominently nerved, sometimes connate, much longer than the yellow flowers; umbellets many-flowered, the fruiting pedicels 2–3 mm. long; fruit oblong, 6–9 mm. long, 3–4 mm. broad, glabrous, the wings much narrower than the body, the oil tubes solitary in the intervals, 4 on the commissure.

TYPE: *Cusick*, “abundant on hillsides in the Wallowa region of eastern Oregon,” June 1886.

DISTRIBUTION: Western Idaho and adjacent Washington and Oregon.

SPECIMENS EXAMINED: IDAHO: on the lower Clearwater River, Nez Perce Co., *Sandberg, MacDougal & Heller* 21 (Po, US); near Lewiston, Nez Perce Co., *Heller & Heller* 4043 (Po); Julietta, Hatwai Co., Lake Waha, *Henderson* 4847 (US). WASHINGTON: Blue Mts., Walla Walla Co., *Piper* 2341 (Po). OREGON: Billy Meadows, Wallowa National Forest, *Jardine* 198 (US); near Harper Ranch, Malheur Co., *Leiberg* 2123 (US); dry hills of the Wallowa, *Cusick* 1394 (US type coll., UC); Buckhorn Springs, Wallowa Co., *Peck* 18285 (Th); dry slope 15 mi. n. e. of Enterprise, Wallowa Co., *Peck* 17467 (Th).

20. *Lomatium vaginatum* Coult. & Rose, Contr. U. S. Nat. Herb. 7: 223. 1900.

Cogswellia vaginata (Coult. & Rose) Jones, Contr. Western Bot. **12**: 34. 1908.

Plants caulescent, 2.3–4.5 dm. tall, more or less scabrous, from an elongated, more or less thickened root; leaves ovate, the blades 5–13 cm. long, ternate, then 1–2-pinnate, the leaflets crowded, oblong, 1–5 mm. long, about 1 mm. broad, apiculate,

the petioles 1.5–9 cm. long, entirely sheathing in the stem leaves; peduncles exceeding the leaves; umbels 14–25-rayed, the fruiting rays 6–12, unequal, 1–4.5 cm. long, ascending; involucre bracts conspicuous, oblanceolate to obovate, acute; umbellets many-flowered, the flowers yellow, the fruiting pedicels 3–8 mm. long; fruit broadly elliptical to somewhat obovate, 8–12 mm. long, 5–8 mm. broad, granulate-roughened, the wings nearly as broad as the body, the oil tubes 3–4 in the intervals, 4 on the commissure.

TYPE: *Cusick* 1655 ("1697"), Logan Valley, Union Co., Oregon (US TYPE, M, Po, UC).

DISTRIBUTION: Eastern Oregon and northeastern California.

SPECIMENS EXAMINED: OREGON: near Beulah, Malheur Co., *Leiberg* 2293 (Po, UC); Owyhee, Malheur Divide, *Leiberg* 2160 (UC); 10 mi. north of Mitchell, Wheeler Co., *Peck* 16020 (Th); Lakeview, *Peck* 15254 (Th); Barren Valley, *Cusick* 2563 (M, Po in part).

21. *Lomatium utriculatum* (Nutt.) Coult. & Rose, Contr. U. S. Nat. Herb. 7: 215. 1900.

Peucedanum utriculatum Nutt. ex Torr. & Gray, Fl. N. Am. 1: 628. 1840.

Cogswellia caruifolia (Hook. & Arn.) Jones var. *patens* Jones, Contr. Western Bot. 12: 41. 1908.

C. utriculata (Nutt.) Jones, Contr. Western Bot. 12: 34. 1908.

C. Chandleri Jones, Contr. Western Bot. 13: 11. 1910.

Lomatium Chandleri (Jones) Macbr. Contr. Gray Herb. n.s. 53: 15. 1918.

L. utriculatum (Nutt.) Coult. & Rose var. *glabrum* Jepson, Madroño 1: 152. 1924.

L. utriculatum (Nutt.) Coult. & Rose var. *anthemifolium* Jepson, Fl. Calif. 2: 639. 1936.

Plants caulescent, 1–5 dm. tall, glabrous to pubescent, purplish below, from a long slender tap-root; leaves oblong, the blades 2.5–16 cm. long, tripinnate, sometimes ternate, then tripinnate, the leaflets linear, 2–25 mm. long, 0.5–3 mm. broad, apiculate, the petioles 1–10 cm. long, wholly sheathing except in some of the basal leaves; terminal peduncles exceeding the leaves; umbels 5–13-rayed, the fruiting rays unequal, 1–12 cm. long, spreading to ascending; involucre bracts obovate, entire to cleft, green with a scarious margin to purplish and subscarious, occasionally prominently nerved, about equalling the yellow flowers; umbellets about 20-flowered, the fruiting pedicels 2–9 mm. long; fruit ovate to oblong, 5–11 mm. long, 3–8

mm. broad, puberulent when young, becoming glabrous, the wings thin, mostly broader than the body, the oil tubes 1–3 in the dorsal intervals, 1–4 in the lateral intervals, 2–6 on the commissure, rarely obscure.

TYPE: *Nuttall*, "rocky plains, particularly near the confluence of the Wahlamet and Oregon Rivers," Oregon (Ph).

DISTRIBUTION: British Columbia to southern California.

TYPICAL SPECIMENS: WASHINGTON: Lopez, San Juan Islands, *Zeller & Zeller* 1259 (M, NY); Goose Rock, Whidby Island, Island Co., *Thompson* 6041, 8934 (M, NY, UC). CALIFORNIA: near Lakeport, Lake Co., *Baker* 3063 (M, NY, UC); Nelson Range, Inyo Co., *Hall & Chandler* 7157 (UC); grade between Clear Creek and Paradise, Butte Co., *Heller & Brown* 5542 (M, NY); *Bridges* 131 (NY).

21a. *Lomatium utriculatum* (Nutt.) Coult. & Rose var. *papillatum* (Henderson) Mathias, comb. nov.

Cogswellia utriculata (Nutt.) Jones var. *papillata* Henderson, *Rhodora* 33: 204. 1931.

Similar to the species but the mature fruit roughened with budlike 1–several-celled papillae.

TYPE: *Henderson* 12614, south slope of Siskiyou Mts., in copses near the California line, Jackson Co., Oregon, 17 May, 12 June 1930 (UO).

DISTRIBUTION: Oregon.

22. *Lomatium Vaseyi* Coult. & Rose, Contr. U. S. Nat. Herb. 7: 216. 1900.

Peucedanum Vaseyi Coult. & Rose, Bot. Gaz. 13: 144. 1888; Rev. N. Am. Umbell. 67. 1888.

Cogswellia Vaseyi Coult. & Rose, Contr. U. S. Nat. Herb. 12: 451. 1909.

C. caruifolia (Hook. & Arn.) Jones var. *Vaseyi* (Coult. & Rose) Jones, Contr. Western Bot. 12: 41. 1908.

Plants caulescent, 2.5–3.5 dm. tall, sparsely to densely pubescent with pilose hairs, from a long somewhat thickened taproot; leaves broadly oblong, the blades 4–8 cm. long, ternate, then bipinnate, the leaflets oblong, 3–17 mm. long, 0.5–1 mm. broad, apiculate, the petioles 1.5–7 cm. long, partially to wholly sheathing in the stem leaves; peduncles exceeding the leaves; umbels 10–20-rayed, the fruiting rays unequal, 2–7.5 cm. long, ascending; involucre bracts obovate, scarious-margined, entire or lobed toward the apex, glabrous or villosulose, about equaling the yellow flowers; umbellets about 30-flowered, the fruiting

pedicels 3–8 mm. long; fruit ovate to obovate, 9–15 mm. long, 5–10 mm. broad, glabrous, the wings thin, usually broader than the body, the dorsal ribs filiform, the oil tubes solitary in the intervals, 4 on the commissure, the calyx lobes prominent, especially in the young fruit.

TYPE: *Vasey* 231, San Bernardino Mts., California, May 1880.

DISTRIBUTION: Southern California, southern Inyo Co. to San Luis Obispo Co., south to San Diego Co.

TYPICAL SPECIMENS: CALIFORNIA: San Jacinto, *Jones* 3172 (M, NY, UC); Highland, San Bernardino Co., *Parish* (NY, UC); San Bernardino, *Parish* 4699 (NY, UC).

23. *Lomatium caruifolium* (Hook. & Arn.) Coult. & Rose, Contr. U. S. Nat. Herb. 7: 216. 1900.

Ferula caruifolia Hook. & Arn. Bot. Beechey Voy. 348. 1840.

Peucedanum caruifolium (Hook. & Arn.) Torr. & Gray, Fl. N. Am. 1: 628. 1840.

P. californicum Nutt. ex Torr. & Gray, Fl. N. Am. 1: 628. 1840, *nom. nud.* in *synon.*, not of Coult. & Rose (1888).

Cogswellia caruifolia (Hook. & Arn.) Jones, Contr. Western Bot. 12: 34. 1908.

Lomatium caruifolium (Hook. & Arn.) Coult. & Rose var. *solanense* Jepson, Madroño 1: 151. 1924.

L. caruifolium (Hook. & Arn.) Coult. & Rose var. *erythropodium* Jepson, Fl. Calif. 2¹: 638. 1936.

Plants acaulescent or short-caulescent, 2–3 dm. tall, glabrous to slightly pubescent, from a long slender tap-root; leaves broadly ovate to obovate, the blades 9–11 cm. long, 1–3-ternate, or simply ternate, then bipinnate, the leaflets linear, 2–15 mm. long, about 1 mm. broad, apiculate, the petioles 4–7 cm. long, wholly inflated; peduncles exceeding the leaves; umbels 4–11-rayed, the rays unequal, 1.3–12 cm. long; involucre bracts obovate, sessile or petiolulate, entire or toothed, green to purplish, scarious-margined, prominently veined, equalling the yellow flowers; umbellets many-flowered, the fruiting pedicels 1–10 mm. long; fruit narrowly ovate to obovate, 7–8 mm. long, about 5 mm. broad, glabrous, the wings thickish, narrower than the body, the oil tubes obscure.

TYPE: *Douglas*, California.

DISTRIBUTION: Coast ranges, San Luis Obispo Co. to Humboldt and Trinity counties, California.

TYPICAL SPECIMENS: CALIFORNIA: San Luis Obispo, *Jones 3600* (M, Po, NY); Crystal Springs Lake, San Mateo Co., *Baker 426* (M, NY, Po, UC); Castroville, Monterey Co., *Elmer 4753* (M, NY, UC).

23a. *Lomatium caruifolium* (Hook. & Arn.) Coult. & Rose
var. ***denticulatum*** Jepson, *Madroño* 1: 151. 1924.

Peucedanum erosum Jepson, *Erythea* 5: 1. 1897.

Rays unequal, 6.5–14 cm. long; wing margins roughened or denticulate.

TYPE: *Eastwood*, Exeter, Tulare Co., on the east side of the San Joaquin Valley, California, 26 May 1895.

DISTRIBUTION: Known only from the type collection.

23b. *Lomatium caruifolium* (Hook. & Arn.) Coult. & Rose
var. ***marginatum*** (Benth.) Mathias, comb. nov.

Peucedanum marginatum Benth. Pl. Hartw. 312. 1849.

Lomatium marginatum (Benth.) Coult. & Rose, Contr. U. S. Nat. Herb. 7: 223. 1900.

Cogswellia marginata (Benth.) Jones, Contr. Western Bot. 12: 35. 1908.

Lomatium alatum acc. to Jepson, Man. 724. 1925, not Coult. & Rose (1900).

Plants rarely short-caulescent, mostly taller than the species; leaf-blades up to 20 cm. long, the leaflets remote, filiform to linear, 0.5–4.5 cm. long, the petioles 13 cm. long; involucl bracts linear, rarely absent, distinct, subacuminate, white-scarious-margined, rarely toothed at the apex, exceeding the yellow flowers; fruiting pedicels up to 13 mm. long; fruit up to 10 mm. long.

TYPE: *Hartweg 1752* (260), "in valle Sacramento," California (G type coll.).

DISTRIBUTION: Western slopes of the northern Sierra Nevada foothills, California.

SPECIMENS EXAMINED: CALIFORNIA: 8 miles north of Oroville, Butte Co., *Heller 11769* (Cl); Salmon Falls, Eldorado Co., *K. Brandegee* (UC); near Jenny Lind, Calaveras Co., *Stanford 1207* (M); New York Ravine, Eldorado Co., *K. Brandegee* (UC); near Collegeville, San Joaquin Co., *Stanford 847* (Po).

The specimens cited above apparently belong to this variety although they differ from the type in having the leaflets usually filiform instead of linear, the involucl sometimes wanting, and the pedicels mostly shorter.

This variety seems to be a robust form of the species but can be distinguished by its involucl bracts.

**23c. *Lomatium caruifolium* (Hook. & Arn.) Coult. & Rose
var. *purpureum* (Jepson) Mathias, comb. nov.**

Lomatium alatum Coult. & Rose var. *purpureum* Jepson, Madroño 1: 158. 1924.
L. marginatum (Benth.) Coult. & Rose var. *purpureum* Jepson, Fl. Calif. 2¹:
645. 1936.

Leaflets filiform, usually longer than in the species; involucler bracts filiform to lanceolate, rarely oblanceolate; flowers purple.

TYPE: *Jepson*, Conn Valley, Napa Range, California.

DISTRIBUTION: Known only from Napa Co., California.

SPECIMENS EXAMINED: CALIFORNIA: Butts Valley Road to Middletown, 5 miles from Aetna Springs, *Howell 6148* (UC); 5 mi. n. e. of Aetna Springs along Butts Creek, *Keck 1076* (M, Po); Knoxville, *Baker 2971* (M, Po); 1.9 mi. southeast of Napa-Lake Co. line, on Knoxville Road, *Mathias 1298* (UC).

**24. *Lomatium nevadense* (Wats.) Coult. & Rose, Contr. U. S.
Nat. Herb. 7: 220. 1900.**

Peucedanum nevadense Wats. Proc. Am. Acad. 11: 143. 1876.

P. nudicaule acc. to Wats. Bot. King Exp. 130. 1871, and others, not Nutt. (1840), in part (excl. *Hall & Harbour 212* and Parry's Colorado collection).

P. nevadense Wats. var. *cupulatum* Jones, Contr. Western Bot. 8: 29. 1898.

Lomatium nevadense (Wats.) Coult. & Rose var. *cupulatum* (Jones) Coult. & Rose, Contr. U. S. Nat. Herb. 7: 221. 1900.

Cogswellia nevadensis (Wats.) Jones, Contr. Western Bot. 12: 33. 1908.

C. nevadensis (Wats.) Jones var. *cupulata* Jones, Contr. Western Bot. 12: 33. 1908.

Plants acaulescent or short-caulescent, 1–4.5 dm. tall, pubescent, from a long slender tap-root; leaves oblong to obovate, the blades 5–6 cm. long, tripinnate, the leaflets crowded, oblong, 2–3 mm. long, about 1 mm. broad, apiculate, the petioles 4–6 cm. long, sheathing to above the middle, purplish; peduncles exceeding the leaves; umbels 8–22-rayed, the fruiting rays unequal, 1–2.5 cm. long, spreading; involucler bracts conspicuous, about equalling the white flowers, linear and distinct or obovate and connate, scarious-margined; umbellets about 20-flowered, the fruiting pedicels 3–10 mm. long; fruit more or less puberulent, ovate to oblong-obovate, 6–8 mm. long, 4–6 mm. broad, the wings narrower than the body, the oil tubes 2–9 in the intervals, 4–12 on the commissure.

TYPE: *Watson 469*, "very frequent in western Nevada from the Washoe to the West Humboldt Mountains," 4500–6000 feet (US TYPE, NY).

DISTRIBUTION: Western Utah to Oregon and eastern California, south to southern Arizona.

TYPICAL SPECIMENS: NEVADA: north of Reno, Washoe Co., *Heller 10243* (M, NY, US); Empire City, *Jones 3880* (M, NY, Po, US). CALIFORNIA: Prosser Creek near Truckee, Nevada Co., *Sonne 358* (M).

24a. *Lomatium nevadense* (Wats.) Coult. & Rose var. *Parishii* (Coult. & Rose) Jepson, Madroño 1: 156. 1924.

Peucedanum Parishii Coult. & Rose, Bot. Gaz. **13**: 209. 1888.

Lomatium Parishii Coult. & Rose, Contr. U. S. Nat. Herb. **7**: 235. 1900.

Cogswellia nevadensis (Wats.) Jones var. *Parishii* (Coult. & Rose) Jones, Contr. Western Bot. **12**: 33. 1908.

C. decipiens Jones, Contr. Western Bot. **12**: 34, 38. 1908.

C. Parishii Coult. & Rose, Contr. U. S. Nat. Herb. **12**: 450. 1909.

Mostly taller than the species, leaf segments sometimes elongate, up to 35 mm. long; rays usually longer, 1.5–5.5 cm. long; involucler bracts sometimes reduced to a sheath or a single bract; pedicels 3–12 mm. long; ovaries glabrous; fruit 7–10 mm. long, 3–6 mm. broad, glabrous, the oil tubes 1–4 in the intervals, 4–7 on the commissure.

TYPE: *Parish 1828*, Bear Valley (San Bernardino Mts.), California (NY, UC, US type coll.).

DISTRIBUTION: Western New Mexico to the San Bernardino Mts., California, southeastern Oregon to northern Sonora.

TYPICAL SPECIMENS: NEW MEXICO: Mangus Springs, *Rusby 148* (M, US). NEVADA: Mica Mine, *Jones 5072f* (Po, US). CALIFORNIA: n. side Old Baldy Mt., San Bernardino Co., *Parish 1942* (US); Pah Ute Peak, *Purpus 5288* (M, UC, US).

24b. *Lomatium nevadense* (Wats.) Coult. & Rose var. *pseudorientale* (Jones) Munz, Man. So. Calif. Bot. 360. 1935.

Cogswellia nevadensis (Wats.) Jones var. *pseudorientalis* Jones, Contr. Western Bot. **12**: 33, 37. 1908.

Lomatium nevadense (Wats.) Coult. & Rose var. *holopterum* Jepson, Madroño 1: 156. 1924.

Similar to variety *Parishii*, the petioles more prominently scarious-margined; wings broader than the body, the dorsal ribs evident.

TYPE: *Jones*, Skull Valley, northwestern Arizona, 4300 feet, 1 May 1903 (Po).

DISTRIBUTION: Northwestern Arizona and adjacent Nevada and California.

SPECIMENS EXAMINED: NEVADA: Good Springs, *K. Brandegee* (UC). ARIZONA: Skull Valley, *Jones* (NY, Po, US); Prescott, *Harrison 4013* (US); Williams to Ash Fork, *Loomis 6929* (NY); Chloride, *Jones* (Po, NY); Hualapai Mts., *Jones* (Po); Grand Cañon, *Jones* (Po). CALIFORNIA: vic. of Bonanza King Mine, east slope of Providence Mts., Mojave Desert, *Munz, Johnston & Harwood 4236* (Po, US); Barnwell, *K. Brandegee* (Po, UC); Mojave, *Jones* (UC), *Purpus 7092a* (UC).

25. *Lomatium Plummerae* Coult. & Rose, Contr. U. S. Nat. Herb. 7: 232. 1900.

Peucedanum Plummerae Coult. & Rose, Bot. Gaz. 14: 278. 1889.

Cogswellia Plummerae (Coult. & Rose) Jones, Contr. Western Bot. 12: 34, 35. 1908.

Plants short-caulescent, 2–3.5 dm. tall, glabrous, from a long slender tap-root; leaves crowded near the base, oblong, the blades 5–10 cm. long, ternate, then bipinnate, the leaflets linear to oblong, 3–7 mm. long, 0.5–1 mm. broad, apiculate, the petioles 3–6 cm. long, entirely sheathing, scarious-margined; peduncles exceeding the leaves; umbels 10–25-rayed, the fruiting rays unequal, 0.5–7.5 cm. long, ascending; involucre bracts dimidiate, linear-lanceolate, acute, distinct or connate to above the middle, scarious at least on the margin, prominently nerved, entire or toothed, equalling to exceeding the yellow or purplish (white ?) flowers; umbellets many-flowered, the fruiting pedicels 3–8 mm. long; fruit oblong to oblong-ovate, 9–13 mm. long, 4–7 mm. broad, glabrous, usually acute at the apex, the wings narrower than the body, the oil tubes 1, rarely 2–3, in the intervals, 4–8 on the commissure.

TYPE: *Lemmon & Lemmon, 32 and 40*, Sierra Valley, Sierra Co., May 1889, and near Shasta, Shasta Co., 28 June 1889 (UC type coll.).

DISTRIBUTION: Northern Sierra Nevada from Sierra Co. to Shasta Co., California.

SPECIMENS EXAMINED: NEVADA: along road to Reno, *Sonne* (UC). CALIFORNIA: west of Verdi, Nevada, *Mathias 1207* (UC); Sierra Valley, *Lemmon s. n.* (UC); near Shasta, *Lemmon* (UC).

Lomatium Plummerae was originally described as having white flowers. It is very possible that this was an error easily made in a study from dried specimens. *Mathias 1207* is an excellent match for the type material of *L. Plummerae* but has yellow or purplish flowers.

25a. *Lomatium Plummerae* Coult. & Rose var. *Sonnei* (Coult. & Rose) Jepson, Madroño 1: 157. 1924.

Lomatium Sonnei Coult. & Rose, Contr. U. S. Nat. Herb. 7: 236. 1900.

Cogswellia Sonnei (Coult. & Rose) Jones, Contr. Western Bot. 12: 34. 1908.

Similar to the species but pubescent; the fruiting pedicels up to 10 mm. long; fruit glabrous.

TYPE: *Sonne*, sandy soil among sagebrush, Verdi, Washoe Co., Nevada, 5 May, 16 June 1895 (US).

DISTRIBUTION: Western Sierra Co., California, and adjacent Nevada.

SPECIMENS EXAMINED: NEVADA: along road to Reno, *Sonne* (UC); Verdi, Washoe Co., *Sonne* (UC type coll.); Reno, *Cowgill* (UC), *Jones* (Po), *Hillman* (Po), *Canby 24* (Po); Truckee Pass, Washoe Co., *Kennedy 1338* (M, UC); 2 mi. south of Virginia City, *Mathias 1269* (UC); 8 mi. n. e. of Reno, along Pyramid Lake Road, *Mathias 1223* (UC); 2 mi. east of Verdi, *Mathias 1215* (UC); about 10 mi. east of Glenbrook along Carson City Road, *Mathias 1271, 1272* (UC). CALIFORNIA: west of Verdi, Nevada, *Mathias 1208* (UC).

Jepson's interpretation of *L. Sonnei* as a variety of *L. Plummerae* is undoubtedly correct, since *Mathias 1207*, *L. Plummerae*, and *Mathias 1208*, variety *Sonnei*, were collected together near the type locality of the latter.

25b. *Lomatium Plummerae* Coult. & Rose var. *Austinae* (Coult. & Rose) Mathias, comb. nov.

Peucedanum Austinae Coult. & Rose, Bot. Gaz. 13: 208. 1888; Rev. N. Am. Umbell. 66. 1888.

Lomatium Austinae Coult. & Rose, Contr. U. S. Nat. Herb. 7: 236. 1900.

Cogswellia Austinae (Coult. & Rose) Jones, Contr. Western Bot. 12: 35. 1908.

Similar to variety *Sonnei* in pubescence; fruit ovate, about 8 mm. long, about 5 mm. broad, not pointed at the apex.

TYPE: *Mrs. R. M. Austin*, Plumas Co., California, June 1880.

DISTRIBUTION: Known only from Plumas Co., California.

SPECIMENS EXAMINED: CALIFORNIA: Mohawk Valley, Plumas Co., *Lemmon 23, s. n.* (UC).

This plant has been distinguished by its purplish flowers. Specimens of *L. Plummerae* and its variety, *Sonnei*, frequently have purplish flowers, a character which is not apparent in herbarium material.

25c. *Lomatium Plummerae* Coult. & Rose var. *Helleri* Mathias, var. nov.

Planta 3.0–3.8 dm. alta cum 1–2-foliis caulinis, fructibus immaturis granulatis.

Plants 3–3.8 dm. tall, more caulescent than the species, with 1–2 stem leaves above, the primary leaf divisions more remote; sometimes scaberulent at the nodes; pedicels up to 10 mm. long; young fruit granulate-roughened.

TYPE: *Heller 10838*, near Marston Station, Plumas Co., California, 3500 feet, 13 June 1913 (UC 175513 TYPE, M).

DISTRIBUTION: Known only from the type collection.

26. *Lomatium MacDougali* Coult. & Rose, Contr. U. S. Nat. Herb. 7: 233. 1900.

Lomatium Jonesii Coult. & Rose, Contr. U. S. Nat. Herb. 7: 233. 1900.

Cogswellia MacDougali (Coult. & Rose) Jones, Contr. Western Bot. 12: 34. 1908.

C. Jonesii (Coult. & Rose) Jones, Contr. Western Bot. 12: 34. 1908.

Lomatium semisepultum Peck, Proc. Biol. Soc. Wash. 50: 122. 1937.

Plants acaulescent, 0.7–3 dm. tall, more or less villous throughout, from a long slender tap-root; leaves oblong-ovate, the blades 2–15 cm. long, ternate, then tripinnate, the leaflets crowded, linear to ovate, 1–5 mm. long, 0.5–1 mm. broad, apiculate, the petioles 1–2.5 cm. long, shorter than the leaf blades, mostly sheathing throughout, purplish; peduncles exceeding the leaves; umbels 2–14-rayed, the rays 0.5–6 cm. long, spreading; involucre bracts scarious, linear, usually distinct, villous; umbellets about 20-flowered, the flowers yellow, somewhat purplish-tinged, the fruiting pedicels 3–10 mm. long; fruit ovate to suborbicular, 6–11 mm. long, 4–7 mm. broad, pubescent, the wings narrower than the body, the oil tubes 1–4 in the intervals, 4–6 on the commissure.

TYPE: *Jones 5435*, Irelands Ranch, head of Salina Canyon, Utah, alt. 2400 m., 15 June 1894 (US).

DISTRIBUTION: Great Basin, from western Wyoming to central Oregon, south to central Arizona.

TYPICAL SPECIMENS: WYOMING: Ft. Steele, *Nelson 4835* (NY, US); Cooper Lake, Albany Co., *Goodding 13* (M, NY, Po, US). UTAH: Frisco, *Jones 1689* (NY, US). ARIZONA: Mormon Lake, *MacDougal 84* (NY, UC, US type of *L. MacDougali*); Walnut Canyon, *Purpus 20* (M, UC, US).

27. *Lomatium juniperinum* (Jones) Coult. & Rose, Contr. U. S. Nat. Herb. 7: 235. 1900.

Peucedanum juniperinum Jones, Contr. Western Bot. 8: 29. 1898.

Cogswellia juniperina Jones, Contr. Western Bot. 12: 34. 1908.

Plants acaulescent or short-caulescent, 1.2–2.2 dm. tall, puberulent, from a long slender tap-root; stems purplish below; leaves broadly ovate, the blades 3–6 cm. long, 1–2-ternate or quinate, then 2–3-pinnate, the leaflets crowded, filiform to linear, 1–4 mm. long, 0.5–1 mm. broad, entire, apiculate, the petioles 1.5–3 cm. long, entirely sheathing; peduncles exceeding the leaves; umbels 8–20-rayed, the fruiting rays 3–8, unequal, 1–5 cm. long, ascending; involucre bracts filiform-subulate, scarious, about equalling the yellow flowers; umbellets many-flowered, the fruiting pedicels 5–10 mm. long; ovaries and fruit glabrous, the fruit oblong, 5–8 mm. long, 3–4 mm. broad, the wings about half the width of the body, the oil tubes 2–3 in the intervals, 4 on the commissure.

TYPE: *Jones*, among junipers, Coalville, Utah, 14 May 1889 (Po).

DISTRIBUTION: Northern Utah, adjacent Idaho, and Wyoming.

TYPICAL SPECIMENS: WYOMING: Evanston, *Nelson 3016* (M); Carter, *Jones* (Po).

28. *Lomatium foeniculaceum* (Nutt.) Coult. & Rose, Contr. U. S. Nat. Herb. 7: 222. 1900.

? *Ferula pubescens* Nutt. in Fraser's Cat. 1813, nom. nud.

F. foeniculacea Nutt. Gen. Am. 1: 183. 1818.

Lomatium villosum Raf. Journ. Phys. 89: 101. 1819.

Cogswellia villosa (Raf.) Spreng. ex Linn. Syst. Veg. ed. Roem. & Schult. 6: XLVIII. 1820.

Pastinaca foeniculacea (Nutt.) Spreng. ex Linn. Syst. Veg. ed. Roem. & Schult. 6: 587. 1820.

Lomatium pubescens Raf. ex Seringe, Bull. Bot. 1: 216. 1830.

L. athamantoides Raf. The Good Book 1: 55. 1840.

Peucedanum foeniculaceum Nutt. ex Torr. & Gray, Fl. N. Am. 1: 627. 1840.

P. foeniculaceum Nutt. var. *daucifolium* Nutt. ex Torr. & Gray, Fl. N. Am. 1: 627. 1840, as to specimens from Saskatchewan.

Pastinaca ferulacea Walp. Rep 2: 412. 1844–45, nom. nud. in synonym.

Peucedanum villosum (Raf.) Nutt. ex Wats. Bot. King Exp. 131. 1871.

Cogswellia villosa (Raf.) Jones, Contr. Western Bot. 12: 34. 1908.

C. foeniculacea (Nutt.) Coult. & Rose, Contr. U. S. Nat. Herb. 12: 449. 1909.

Plants acaulescent, 1–5 dm. tall, villous to glabrate, from a long, more or less thickened tap-root; leaves ovate to oblong, the blades 4.5–13 cm. long, 3–4-pinnate, the leaflets crowded, linear, 2–4 mm. long, about 0.5–1 mm. broad apiculate, the petioles 3–8 cm. long, sheathing about to the middle, the sheath purplish, subscarious; peduncles exceeding the leaves; umbels 8–24-rayed, the rays subequal, 0.7–12.5 cm. long, spreading to erect; involucl bracts dimidiate, lanceolate, connate below, entire or lobed, acute to acuminate, somewhat scarious-margined, about equalling the yellow flowers; umbellets 25–50-flowered, the fruiting pedicels 2–13 mm. long; fruit ovate-oblong, 7–10 mm. long, 4–6 mm. broad, more or less pubescent, the wings narrower than the body, the oil tubes 3 in the intervals, 4 on the commissure.

TYPE: *Nuttall*, “on the high plains of the Missouri, commencing about the confluence of the river Jauke.” (Probably the James (Jacques) River in South Dakota.)

DISTRIBUTION: Manitoba to northern Oklahoma, western Missouri to western Montana and Wyoming.

TYPICAL SPECIMENS: SOUTH DAKOTA: Newell, *Carr 1* (M, NY, US); Fort Meade, *Forwood 145* (M, US). WYOMING: 45 miles n. of Point of Rocks, *Merrill & Wilcox B 571* (NY, US); Ft. Steele, *Nelson 4835* (M).

29. *Lomatium daucifolium* (Nutt.) Coult. & Rose, Contr. U. S. Nat. Herb. 7: 221. 1900.

Peucedanum foeniculaceum Nutt. var. *daucifolium* Nutt. ex Torr. & Gray, Fl. N. Am. 1: 627. 1840, in part.

P. daucifolium Nutt. ex Torr. & Gray, Fl. N. Am. 1: 627. 1840, nom. nud. in synon.

P. villosum Nutt. ex Wats. Bot. King Exped. 131. 1871, in part.

Cogswellia daucifolia (Nutt.) Jones, Contr. Western Bot. 12: 34. 1908.

Peucedanum foeniculaceum of many later authors, not Nutt. (1840).

Plants acaulescent, 1–4.5 dm. tall, villous-tomentose to glabrate, from a long, more or less swollen tap-root; leaves broadly ovate to obovate, the blades 5–19 cm. long, ternate, then 3–4-pinnate, the leaflets linear, 2–8 mm. long, about 0.5 mm. broad, more or less crowded, entire, apiculate, the petioles 3–13 cm. long, purplish, sheathing below; peduncles exceeding the leaves; umbels 12–30-rayed, the rays subequal, 1.5–7 cm. long, erect to spreading; involucl bracts subdimidiate,

lanceolate, acute to acuminate, subscarious, conspicuously nerved, connate to above the middle, equalling the yellow flowers; umbellets 20–40-flowered, the fruiting pedicels 4–13 mm. long, the ovaries glabrous; fruit ovate-oblong, 6–9 mm. long, 3–6 mm. broad, glabrous, the wings narrower than the body, the oil tubes 1–3 in the intervals, 2–4 on the commissure, occasionally solitary near the base of each wing.

TYPE: *Nuttall*, on the Platte, probably in Nebraska (NY, Ph).

DISTRIBUTION: Southern South Dakota to Texas.

TYPICAL SPECIMENS: MISSOURI: Independence, Jackson Co., *Bush 322* (M, NY, US). KANSAS: Riley Co., *Norton 190, 190a* (M, NY, US). OKLAHOMA: near Cora, Woods Co., *Stevens 221* (M, US); Norman, *Gould* (M).

30. *Lomatium orientale* Coult. & Rose, Contr. U. S. Nat. Herb. 7: 220. 1900.

Peucedanum nudicaule Nutt. ex Torr. & Gray, Fl. N. Am. 1: 627. 1840, in large part, and of all later authors.

P. orientale (Coult. & Rose) Blankinship, Mont. Agric. Coll. Sci. Studies, Bot. 1: 93. 1905.

Cogswellia orientalis (Coult. & Rose) Jones, Contr. Western Bot. 12: 33. 1908.

Plants short-caulescent, 1–4 dm. tall, soft-puberulent, from a long slender tap-root; leaves ovate to oblong, the blades 4–11 cm. long, tripinnate, the leaflets crowded, the uppermost confluent, linear, 1–12 mm. long, 0.5–2 mm. broad, apiculate, the petioles 2–12 cm. long, sheathing below, petioles of cauline leaves entirely sheathing; fruiting peduncles exceeding the leaves; umbels 6–21-rayed, the rays 1.2–5.5 cm. long, subequal; involucre bracts linear-lanceolate to more or less obovate, distinct, scarious-margined, about equalling the white flowers; umbellets about 20-flowered, the fruiting pedicels 3–9 mm. long, glabrous; fruit ovate-oblong, 5–10 mm. long, 3–7 mm. broad, glabrous, the wings narrower than the body, the oil tubes 1–4 in the intervals, 2–8 on the commissure, rarely 1–2 near the base of the wings.

TYPE: *Bethel*, plains around Denver, Colorado, May 1895 (US).

DISTRIBUTION: Western Minnesota to Kansas, west to Montana and Colorado.

TYPICAL SPECIMENS: NORTH DAKOTA: Leeds, *Lunell* (M, NY). WYOMING: sandy valleys and slopes, Sand Creek, Albany Co., *Nelson 7013* (M, NY, Po). COLORADO: Loveland, *Nelson 10754* (M, NY); Larimer Co., *Baker 203* (M).

31. *Lomatium dasycarpum* (Torr. & Gray) Coult. & Rose, Contr. U. S. Nat. Herb. **7**: 218. 1900.

Peucedanum dasycarpum Torr. & Gray, Fl. N. Am. **1**: 628. 1840.

P. foeniculaceum Torr. Bot. Mex. Bound. Surv. 70. 1859, not Nutt. (1840).

P. Pringlei Coult. & Rose, Bot. Gaz. **13**: 209. 1888.

P. Jaredi Eastw. Zoe **5**: 88. 1900.

Cogswellia Jaredi (Eastw.) Coult. & Rose, Contr. U. S. Nat. Herb. **12**: 450. 1909.

C. dasycarpa (Torr. & Gray) Jones, Contr. Western Bot. **12**: 34. 1908.

Lomatium dasycarpum (Torr. & Gray) Coult. & Rose var. *decorum* Jepson, Madroño **1**: 154. 1924.

L. dasycarpum (Torr. & Gray) Coult. & Rose var. *medium* Jepson, Madroño **1**: 154. 1924.

Plants acaulescent or short-caulescent, 1–4 dm. tall, villous-tomentose to glabrate, purplish, especially below, from a long slender tap-root; leaves oblong to ovate, the blades 3–13.5 cm. long, quadripinnate, occasionally ternate, then pinnately decompound, the leaflets crowded, not confluent, linear, 1–3 mm. long, about 0.5 mm. broad, entire, obtuse to acute, the petioles 2.5–10 cm. long, sheathing to near the middle; peduncles exceeding the leaves; umbels 10–20-rayed, the fruiting rays spreading, 1–8.5 cm. long; involucre bracts linear-lanceolate, acute, sometimes connate, about equalling the greenish flowers (appearing white because of the pubescent petals); umbellets many-flowered, the fruiting pedicels 7–20 mm. long, mostly longer than the fruit; fruit orbicular to ovate-oblong, 8–15 mm. long, 7–10 mm. broad, the wings wider than the body, sparingly villous to glabrate, the body tomentulose to glabrate, the oil tubes 1–4 in the intervals, occasionally with smaller accessory oil tubes, 2–4 on the commissure, rarely one at the base of each wing.

TYPE: *Douglas*, California.

DISTRIBUTION: Coast ranges, Lower California to Humboldt and Trinity counties, California.

TYPICAL SPECIMENS: CALIFORNIA: Potrero and Sausalito, *Kellogg & Harford 1156* (M, NY, US); hills 7 miles northeast of Santa Rosa, Sonoma Co., *Heller & Brown 5088a* (M, NY, Po, US); Klamath River, Humboldt Co., *Chandler 1445* (M, NY, UC, US).

32. *Lomatium mohavense* Coult. & Rose, Contr. U. S. Nat. Herb. 7: 234. 1900.

Peucedanum mohavense Coult. & Rose, Rev. N. Am. Umbell. 62. 1888.

P. argense Jones, Contr. Western Bot. 8: 30. 1898.

Lomatium argense (Jones) Coult. & Rose, Contr. U. S. Nat. Herb. 7: 234. 1900.

Cogswellia mohavensis (Coult. & Rose) Jones, Contr. Western Bot. 12: 34. 1908.

C. argensis (Jones) Coult. & Rose, Contr. U. S. Nat. Herb. 12: 449. 1909.

Plants acaulescent, 1–3 dm. tall, short hoary-pubescent, from a long slender tap-root; leaves oblong, the blades 2–9 cm. long, 3–4-pinnate, the leaflets crowded, linear, 2–5 mm. long, 0.5–1.5 mm. broad, mucronulate, the petioles 2.5–12 cm. long, longer than the leaf blades, shortly sheathing below; peduncles exceeding the leaves; umbels 10–16-rayed, the fruiting rays subequal, 1–4.5 cm. long; involucre bracts linear, acute, sometimes inconspicuously scarious-margined, shorter than to about equalling the fruiting pedicels; umbellets many-flowered, the flowers purple, the fruiting pedicels 1–10 mm. long; fruit ovate to orbicular, 4.5–9 mm. long, 4–9 mm. broad, the wings narrower than to equalling the body, the oil tubes 1–4 in the intervals, 4–6 on the commissure.

TYPE: *M. K. Curran*, Yucca, Mojave Desert, California (US fragment).

DISTRIBUTION: Deserts, southern California and adjacent Nevada, especially in the Mojave Desert.

TYPICAL SPECIMENS: NEVADA: Trail Canyon, White Mts., Esmeralda Co., *Duran 2701* (M, UC). CALIFORNIA: Walker Pass, *Purpus 5352* (M, UC, US); Darwin, *Jones* (M, NY, UC, US); Mojave Desert, near Hesperia, *Parish 4929* (US).

33. *Lomatium tomentosum* (Benth.) Coult. & Rose, Contr. U. S. Nat. Herb. 7: 219. 1900.

Peucedanum tomentosum Benth. Pl. Hartw. 312. 1849.

Cogswellia tomentosa (Benth.) Jones, Contr. Western Bot. 12: 35. 1908.

Plants short-caulescent, villous-tomentose throughout, 2.5–5 dm. tall, from a long slender tap-root; leaves oblong to obovate, the blades 5–11 cm. long, pinnately decompose or ternate, then quadripinnate, the leaflets crowded, filiform, 2–6 mm. long, 0.2–0.3 mm. broad, acute, sometimes apiculate, the petioles 4–9 cm. long, sheathing below; peduncles exceeding the leaves;

umbels 12–21-rayed, the fruiting rays subequal, 2.5–8.5 cm. long, spreading; involucre bracts lanceolate to ovate-lanceolate, distinct or connate below, acute to acuminate, entire or cleft above, equalling to exceeding the white or purplish flowers; umbellets many-flowered, the fruiting pedicels 5–20 mm. long, shorter than the mature fruit; fruit ovate-oblong, 16–22 mm. long, 8–18 mm. broad, tomentulose, the wings about equalling the body, tomentulose, the oil tubes 1–3 in the intervals, 3 on the commissure, usually 1 at the base of each wing.

TYPE: *Hartweg 257 (1751)*, “in omnibus exsiccatis fluviorum vallis, Sacramento,” California, 1846–47.

DISTRIBUTION: Great Valley and Sierra Nevada foothills, and Tehachapi Mts., California.

TYPICAL SPECIMENS: CALIFORNIA: Wilcat Canyon, Stanislaus Co., *Stanford 860* (M, Po, US); Berry Canyon, near Clear Creek, Butte Co., *Heller & Brown 5552* (M, NY, Po, US); hills 8 miles north of Oroville, Butte Co., *Heller 11281* (M, NY, US).

34. *Lomatium macrocarpum* (Hook. & Arn.) Coult. & Rose, Contr. U. S. Nat. Herb. **7**: 217. 1900, where the author of the name-bearing synonym is erroneously given as Nuttall.

Ferula macrocarpa Hook. & Arn. Bot. Beechey Voy. 348. 1840.

Peucedanum macrocarpum Nutt. ex Torr. & Gray, Fl. N. Am. **1**: 627. 1840.

P. macrocarpum Nutt. var. ? *eurycarpum* Gray, Proc. Am. Acad. **8**: 385. 1872.

P. eurycarpum (Gray) Coult. & Rose, Rev. N. Am. Umbell. 61. 1888.

Lomatium macrocarpum (Nutt.) Coult. & Rose var. *artemisiarum* Piper, Bull. Torrey Bot. Club **29**: 223. 1902.

L. macrocarpum (Nutt.) Coult. & Rose var. *semivittatum* Piper, Bull. Torrey Bot. Club **29**: 224. 1902.

L. flavum Suksd. Allg. Bot. Zeitschr. **12**: 6. 1906.

L. artemisiarum Piper, Contr. U. S. Nat. Herb. **11**: 423. 1906.

Cogswellia macrocarpa (Nutt.) Jones, Contr. Western Bot. **12**: 33. 1908.

C. artemisiarum (Piper) Coult. & Rose, Contr. U. S. Nat. Herb. **12**: 449. 1909.

C. flava (Suksd.) Coult. & Rose, Contr. U. S. Nat. Herb. **12**: 449. 1909.

C. simulans Coult. & Rose, Contr. U. S. Nat. Herb. **12**: 451. 1909.

Lomatium macrocarpum (Nutt.) Coult. & Rose var. *Douglasii* Jepson, Madroño **1**: 153. 1924.

Cogswellia macrocarpa (Nutt.) Jones var. *artemisiarum* (Piper) St. John, Fl. S.E. Wash. & Adj. Ida. 292. 1937.

Plants short-caulescent, 1–5 dm. tall, densely tomentose to villous, becoming glabrate, purplish especially below, from a slender or somewhat swollen tap-root; leaves oblong to ob-

ovate, the blades 2.5–12 cm. long, ternate, then 2–3-pinnate, the leaflets confluent, oblong to linear, 1–7 mm. long, 0.5–2 mm. broad, entire, mucronulate, the petioles 1.5–7 cm. long, sheathing about to the middle, subscarious; peduncles exceeding the leaves; umbels 5–25-rayed, the rays spreading, 1–8.5 cm. long; involucre bracts dimidiate, linear-lanceolate, acute, equalling to greatly exceeding the white or yellow, sometimes purplish, flowers, becoming reflexed in the mature plant; umbellets many-flowered, the fruiting pedicels 1–14 mm. long, spreading; fruit narrowly oblong, 9–20 mm. long, 2–8 mm. broad; ovaries and young fruit glabrous to villous, the mature fruit glabrous or glabrate, the wings narrower than the body, the oil tubes 1, rarely 2–3, in the dorsal intervals, 1–3 in the lateral intervals, sometimes obscure, 2–6 on the commissure.

TYPE: *Douglas*, California.

DISTRIBUTION: Manitoba to North Dakota, west to British Columbia, south to Kern and Monterey counties, California.

TYPICAL SPECIMENS: YELLOWSTONE NATIONAL PARK: Yellowstone River, near Junction Butte, *Nelson & Nelson 5733* (M, NY, Po, US). WYOMING: 20 miles west of Big Piney, Sublette Co., *Payson & Payson 2633* (M, NY, Po, US). UTAH: Springville, *Jones* (M, NY, US). NEVADA: Palisade, *Jones 3883* (M, NY, Po, US). WASHINGTON: Pullman, *Elmer 96* (M, NY, US); Hangman Creek, Spokane Co., *Sandberg & Leiberg 61* (M, NY, Po, US). CALIFORNIA: near Lakeport, Lake Co., *Baker 2961* (M, NY, Po, US); near summit of Mt. Sanhedrin, Lake Co., *Heller & Brown 5947* (M, US).

This species is the most ubiquitous and most polymorphic in the genus.

34a. *Lomatium macrocarpum* (Hook. & Arn.) Coult. & Rose var. *ellipticum* (Torr. & Gray) Jepson, Madroño 1: 153. 1924.

Peucedanum nudicaule Nutt. var. *ellipticum* Torr. & Gray, Pacific R.R. Rep. 2²: 121. 1855.

Lomatium ellipticum (Torr. & Gray) Coult. & Rose, Contr. U. S. Nat. Herb. 7: 217. 1900.

Cogswellia elliptica (Torr. & Gray) Jones, Contr. Western Bot. 12: 33. 1908.

Similar to the species but the pedicels sometimes longer, up to 16 mm. long; the fruit oblong-elliptic, 16–18 mm. long, 6–10 mm. broad, glabrous, the wings twice as broad as the body.

TYPE: *Snyder*, Round Valley, near the sources of the Sacramento, in the Sierra Nevada, California, 27 June 1854.

DISTRIBUTION: Northern Sierra Nevada, California.

SPECIMENS EXAMINED: CALIFORNIA: near Placerville, *K. Brandegees* (UC).

35. *Lomatium Congdoni* Coult. & Rose, Contr. U. S. Nat. Herb. 7: 232. 1900.

Cogswellia Congdoni (Coult. & Rose) Jones, Contr. Western Bot. 12: 34. 1908.

Plants acaulescent or short-caulescent (?), 1.8–3.6 dm. tall, from a cluster of old leaf sheaths, from a long tap-root; leaves broadly oblong, the blades 6.5–9 cm. long, ternate to quinate, then 2–3-pinnate, the rachises scaberulent, the leaflets distinct, linear, 3–10 mm. long, about 0.5 mm. broad, apiculate, the petiole 2–6 cm. long, entirely sheathing, white-scarious; peduncles exceeding the leaves, purplish, especially below; umbels 6–16-rayed, the fruiting rays 3–7 cm. long, ascending; involucre absent; umbellets about 30-flowered, the flowers yellow, the fruiting pedicels 6–10 mm. long; fruit oblong or somewhat obovate, 7–10 mm. long, 5–6 mm. broad, the wings about half the width of the body, the oil tubes obscure, mostly solitary in the intervals, 2–4 on the commissure.

TYPE: *Congdon 114*, West Water Ditch, Mariposa Co., California, 12, 25 May 1893 (US).

DISTRIBUTION: Known only from the type locality.

SPECIMENS EXAMINED: CALIFORNIA: Mariposa, *Congdon* (UC); West Water Ditch, Mariposa Co., *Congdon* (UC).

36. *Lomatium Sandbergii* Coult. & Rose, Contr. U. S. Nat. Herb. 7: 230. 1900.

Peucedanum Sandbergii Coult. & Rose, Bot. Gaz. 13: 79. 1888; Rev. N. Am. Umbell. 65. 1888.

Cogswellia Sandbergii (Coult. & Rose) Jones, Contr. Western Bot. 12: 35. 1908.

Plants caulescent, 0.7–3 dm. tall, rough-puberulent to glabrate, from a long slender tap-root; leaves suborbicular, the blades 3–7 cm. long, ternate, then tripinnate, the leaflets linear to filiform, 2–4 mm. long, about 0.5 mm. broad, entire, apiculate, the petioles 1–2.5 cm. long, entirely sheathing, the sheaths with a conspicuous white scarious margin; peduncles 1.5–15 cm. long; umbels 5–14-rayed, the fruiting rays unequal, 1–11.5 cm. long, erect; umbellets many-flowered, the fruiting pedicels 2–7

mm. long; involucl bracts filiform to linear, about equalling the yellow flowers; fruit oblong, 7–10 mm. long, 4–5 mm. broad, puberulent, the wings narrower than the body, the oil tubes 4–5 in the intervals, 6 on the commissure.

TYPE: *Sandberg 47*, "bare mountain tops along snowdrifts, Kootenai County, northern Idaho," July 1887 (US type coll.).

DISTRIBUTION: Western Montana and adjacent Idaho.

SPECIMENS EXAMINED: MONTANA: Columbia Falls, *Williams s. n.* (M, Po), 969 (M); McDougal Peak, *Jones s. n.*, 8620 (Po). IDAHO: Kootenai Co., *Sandberg* (M photo); Div. between St. Joe and Clearwater River, *Leiberg 1235* (M); open mountain slopes, ridges south from Wiesner's Peak, *Leiberg 1401* (M).

37. *Lomatium Torreyi* Coult. & Rose, Contr. U. S. Nat. Herb. 7: 229. 1900.

Peucedanum Torreyi Coult. & Rose, Bot. Gaz. 14: 276. 1889.

Cogswellia Torreyi (Coult. & Rose) Jones, Contr. Western Bot. 12: 35. 1908.

Plants acaulescent or caulescent, 1–2.5 dm. tall, glabrous to sparingly scaberulent, from a cluster of dried leaf sheaths; leaves oblong, the blades 2–15 cm. long, ternate, then tripinnate, the leaflets filiform, 3–8 mm. long, 0.2–1 mm. broad, entire, acute, mucronulate, the petioles 2–5 cm. long, sheathing throughout, the sheath with a white scarious margin; peduncles equalling or exceeding the leaves; umbels 5–9-rayed, the fruiting rays unequal, 1–4 cm. long, erect; involucl absent; umbellets 10–30-flowered, the flowers yellow, the fruiting pedicels 1–4 mm. long; fruit narrowly oblong, 10–16 mm. long, 3–4 mm. broad, narrowed toward the base, the wings less than one-half the width of the body, the oil tubes solitary in the intervals.

TYPE: *Torrey & Gray*, Yosemite Valley, California, is the first specimen cited in the original description. *M. K. Curran 16*, Yosemite Valley, June 1883, is given as the type in Contr. U. S. Nat. Herb. 7: 230. Described without name in Bot. Calif. 1: 263, as a plant closely allied to *Podosciadium*.

DISTRIBUTION: Clefts of granite rocks, Sierra Nevada Mts., from Fresno Co. to Tulare Co., California, 6000 to 11,000 feet.

SPECIMENS EXAMINED: CALIFORNIA: Mt. Moses, *Purpus 1531* (UC); Sentinel Dome, Yosemite National Park, *Schreiber 1720* (UC); Alta Meadows, Tulare Co., *K. Brandegee* (M, UC); Rock Creek Basin, Inyo Co., slope west of Long Lake, *Peirson 10771* (UC); road to Alta Meadows, *K. Brandegee* (UC); granite lakes, Granite Basin, Fresno Co., *Youngberg 155* (Po); Piute Pass, North Lake Trail, Inyo Co., *Ferris 8926* (Po).

38. *Lomatium Engelmannii* Mathias, spec. nov.

Planta acaulis, 1–3 dm. alta, pubescens; radicibus elongatis; foliis oblongis, petiolis excludentibus, 2.5–3.5 cm. longis, ternatis, deinde 1–2-pinnatis, foliolis confluentibus, ovato-oblongis, 1–4 mm. longis, 0.5–1 mm. latis, apiculatis, petiolis 2–4 cm. longis; pedunculis foliis longioribus; umbellis 2–7-radiatis, radiis inaequalibus, 1–5.5 cm. longis; umbellulis paucifloribus, sine involucellis, pedicellis 2–8 mm. longis; fructibus ovato-oblongis, 9–10 mm. longis, ca. 5 mm. latis, glabris, alis lateralibus angustis, jugis dorsalibus filiformibus, vittis 1–2 in intervallis, 2–6 in commissura.

Plants acaulescent, 1–3 dm. tall, pubescent, from a long slender tap-root; leaves oblong, the blades 2.5–3.5 cm. long, ternate, then 1–2-pinnate, the leaflets confluent, ovate-oblong, 1–4 mm. long, 0.5–1 mm. broad, apiculate, the petioles 2–4 cm. long, entirely sheathing, purplish; peduncles exceeding the leaves; umbels 2–7-rayed, the fruiting rays 1–4, unequal, 1–5.5 cm. long; involucre bracts absent; umbellets few-flowered, the flowers yellow (?), the fruiting pedicels 2–8 mm. long; fruit ovate-oblong, 9–10 mm. long, about 5 mm. broad, glabrous, the wings half the width of the body, the dorsal ribs filiform, the oil tubes 1–2 in the intervals, 2–6 on the commissure.

TYPE: *George Engelmann*, Scott's Mountain (Siskiyou Co.), northern California, 6000–7000 feet, 30 August 1880 (M 137292 TYPE, 137293).

DISTRIBUTION: Known only from the high mountains in southern Siskiyou Co., California.

SPECIMENS EXAMINED: CALIFORNIA: gravelly slope of Mt. Eddy, south of Wagon Creek, Siskiyou Co., *Heller 13676* (M).

39. *Lomatium angustatum* (Coult. & Rose) St. John, in St. John & Hardin, *Mazama* 11: 83. 1929.

Peucedanum Martindalei Coult. & Rose var. *angustatum* Coult. & Rose, Bot. Gaz. **13**: 143. 1888.

Lomatium Martindalei Coult. & Rose var. *angustatum* Coult. & Rose, Contr. U. S. Nat. Herb. **7**: 225. 1900.

Cogswellia Martindalei (Coult. & Rose) Jones var. *angustata* (Coult. & Rose) Jones, Contr. Western Bot. **12**: 34. 1908.

C. angustata Coult. & Rose, Contr. U. S. Herb. **12**: 449. 1909.

Lomatium Hallii of authors, not *Peucedanum Hallii* Wats. (1876).

Plants short-caulescent, 1.5–2 dm. tall, glabrous, from long slender tap-roots; leaves broadly oblong-ovate, the blades 6.5–15 cm. long, ternate, then 2–3-pinnate, the leaflets confluent and overlapping, ovate, 1–2 mm. long, 1–1.5 mm. broad, somewhat obtuse, minutely mucronulate, the petioles 1.5–3 cm. long, forming a conspicuous scarious sheath; peduncles exceeding the leaves; umbels 6–16-rayed, the rays unequal, 0.5–7 cm. long; involucels absent; umbellets about 20-flowered, the flowers creamy-white, the fruiting pedicels 1–6 mm. long; fruit narrowly oblong, 6–10 mm. long, 3–5 mm. broad, the wings very narrow, the oil tubes 1, rarely 2, in the intervals, 2–4 on the commissure.

TYPE: *Howell*, Cascade Mts., Oregon.

DISTRIBUTION: Mountains of western British Columbia to the Cascade Mts., Oregon, 3000 to 9000 feet.

TYPICAL SPECIMENS: WASHINGTON: Mt. Hermann, Whatcom Co., *Thompson 5319* (M, Th). OREGON: north slope, top of Black Butte, *Cusick 2687* (M, Po, UC); near summit of Cascade Mts. along McKenzie Pass, *Peck 9782* (M).

Lomatium angustatum differs from *L. Martindalei*, with which it has been confused, in having ternate-pinnate leaves, the fruit wings narrower than the body, the fruit less than 6 mm. broad, the pedicels shorter than the fruit (except in var. *flava* in the Olympic Mts.), and a narrowly oblong fruit. *Lomatium Martindalei* does not occur north of the Oregon Cascades. Neither of these species has any close relationship to *L. Hallii* (see note under that species), as has been supposed by all previous authors due to a misinterpretation and confusion in the type specimen of *L. Hallii*.

39a. *Lomatium angustatum* (Coult. & Rose) St. John var. *flavum* G. N. Jones, Univ. Wash. Publ. Biol. 5: 202. 1936.

Similar to the species but the leaves sometimes fleshier, flowers lemon-yellow, pedicels 8–16 mm. long.

TYPE: *Piper 897*, Olympic Mts., Washington.

DISTRIBUTION: Olympic Mts., Washington, 4500–6500 feet.

SPECIMENS EXAMINED: WASHINGTON: Iron Mt., near Marmot Pass, Jefferson Co., *Thompson 7958* (Th); bordering Honeymoon Meadows along west fork of the Dosewallips River and south base of Mt. Anderson, *Meyer 666* (Th); rocky crest of Constance Ridge, Jefferson Co., *Thompson 6590* (Th); rocky summit of Mt. Angeles, Clallam Co., *Thompson 5591* (M, Th); Clallam Co., *Elmer 2771* (M); al-

pine slopes of Mt. Angeles, Clallam Co., *Thompson 7464, 9445* (M, Po, Th, UC); rocky crevices at summit of Col. Bob Lookout, Grays Harbor Co., *Thompson 7259* (M, Th, UC).

40. *Lomatium Grayi* Coult. & Rose, Contr. U. S. Nat. Herb. 7: 229. 1900.

Peucedanum millefolium Wats. Bot. King Exp. 129. 1871, not Sonder (1861-62).

P. Grayi Coult. & Rose, Bot. Gaz. **13**: 209. 1888; Rev. N. Am. Umbell. 60. 1888.

P. Grayi Coult. & Rose var. *aberrans* Jones, Contr. Western Bot. **10**: 55. 1902.

Cogswellia millefolia (Wats.) Jones, Contr. Western Bot. **12**: 35. 1908.

C. Grayi Coult. & Rose, Contr. U. S. Nat. Herb. **12**: 450. 1909.

Lomatium millefolium (Wats.) Macbr. Contr. Gray Herb. n.s. **53**: 15. 1918.

Plants acaulescent or short-caulescent, 2-6.1 dm. tall, from a long thickened tap-root; leaves broadly obovate, the blades 10.5-26 cm. long, glabrous to somewhat scaberulent, 1-2-ternate or quinate, then 2-3-pinnate, the leaflets crowded, linear to filiform, 1-11 mm. long, 0.1-0.25 mm. broad, entire, mucronulate, the petioles 3.5-22 cm. long, sheathing at the base; peduncles exceeding the leaves; umbels 7-22-rayed, the rays spreading, 2-15 cm. long; involucre bracts filiform, entire, occasionally toothed, usually shorter than the yellow flowers, rarely deciduous; umbellets 15-30-flowered, the fruiting pedicels 6-22 mm. long; fruit ovate-oblong to oblong, 7-16 mm. long, 5-8 mm. broad, the wings narrower than to equalling the body, the oil tubes solitary in the intervals, rarely 2-3, especially in the lateral intervals, 2-4, rarely 6, on the commissure.

TYPE: *Watson 466*, Antelope Island, Salt Lake, Utah (US).

DISTRIBUTION: Western Wyoming and Colorado to eastern Washington and Oregon, 750 to 8400 feet.

TYPICAL SPECIMENS: IDAHO: about Lewiston, Nez Perce Co., *Heller & Heller 3043* (M, NY, Po). UTAH: gravel, Fairview, *Jones 5548* (M, NY, Po). WASHINGTON: Hangman Creek, Spokane Co., *Sandberg & Leiberg 5* (M, Po); shores of Snake River, Wawawai, *Piper 1767* (NY).

40a. *Lomatium Grayi* Coult. & Rose var. *depauperatum* (Jones) Mathias, comb. nov.

Cogswellia millefolia (Wats.) Jones var. *depauperata* Jones, Contr. Western Bot. **12**: 38. 1908.

Similar to the species but usually lower; leaves dissected into few remote small linear pinnae.

TYPE: *Jones*, Dugway, Utah, 2 June 1891 (Po 78055).

DISTRIBUTION: Western Utah and adjacent Nevada.

SPECIMENS EXAMINED: UTAH: Dugway, Dutch Mt., Tooele Co., Cove Creek, Detroit, Granite Mts., Tooele Co., Fish Spring, Oquirrh Mts., Deseret, *Jones* (Po); Marjim Canyon, 46 mi. w. of Delta, Millard Co., *Maguire & Becraft 3938* (UC). NEVADA: west of Wendover, *Jones 25253* (Po); Pilot Mt., White Pine Co., *Cottam 4533* (Po); *A. J. Jones* (M).

41. *Lomatium serpentinum* (Jones) Mathias, comb. nov.

Cogswellia serpentina Jones, Contr. Western Bot. 12: 42. 1908.

C. fragrans St. John, Fl. S.E. Wash. & Adj. Ida. 290. 1937.

Plants acaulescent, 2.5–3 dm. tall, essentially glabrous, root thick and woody with a multicipital caudex; leaves oblong, the blade 8.5–15 (30?) cm. long, 1–2-ternate, then bipinnate, the leaflets crowded, lanceolate to oblanceolate, 2–5 mm. long, 1–2 mm. broad, entire, apiculate, minutely papillose above, the petioles 2–6 cm. long, partially to entirely sheathing with scarious-winged margins; peduncles exceeding the leaves; umbels 10–17-rayed, the fruiting rays unequal, 1.5–7 cm. long, spreading to ascending, glabrate; involucl bracts linear-lanceolate, up to 5 mm. long, finely puberulent; umbellets many-flowered, the flowers bright yellow, the fruiting pedicels 3–15 mm. long; fruit oblong, 6–8 (10?) mm. long, 3–4 (5?) mm. broad, glabrous, the wings one-half to equalling the width of the body, the oil tubes solitary in the intervals, 2 on the commissure.

TYPE: *Cusick 3532c*, rocky banks of the Snake River near the mouth of McDougal Creek, Oregon, 28 May 1901.

DISTRIBUTION: Snake River Valley, Idaho, Washington, and Oregon.

SPECIMENS EXAMINED: IDAHO: clefts in basaltic cliffs, above Steep Creek, 2 mi. n. of Sheep Creek, Snake River Canyon, Idaho Co., *Constance, Rollins & Dillon 1591* (Th, UC); basaltic ledges of Cottonwood Rapids, Snake River Canyon, Nez Perce Co., *Constance, Rollins & Dillon 1559* (UC); basalt ledges, rocky south slopes ½ mi. above mouth of Sheep Creek, Snake River Canyon, Idaho Co., *Constance, Herrick & Peters 1829* (UC).

Reported by St. John from Asotin Co., Washington.

42. *Lomatium Donnellii* Coult. & Rose, Contr. U. S. Nat. Herb. 7: 231. 1900.

Peucedanum Donnellii Coult. & Rose, Bot. Gaz. 13: 143. 1888; Rev. N. Am. Umbell. 65. 1888.

Cogswellia Donnellii (Coult. & Rose) Jones, Contr. Western Bot. 12: 34. 1908.

Plants acaulescent or caulescent with the development of a pseudoscape, 1.3–3.3 dm. tall, glabrous, from a long, some-

what stout tap-root; leaves ovate to oblong, the blades 4–10.5 cm. long, ternate then 2–3-pinnate, the leaflets more or less confluent, linear, 1–7 mm. long, 1–2 mm. broad, entire, acute, apiculate; the petioles 1–9 cm. long, sheathing below, sometimes entirely sheathing; peduncles exceeding the leaves; umbels 8–30-rayed, the fruiting rays unequal, 1–9 cm. long, spreading to suberect; involucl bracts filiform to linear-lanceolate, equaling the yellow flowers; umbellets about 20-flowered, the fruiting pedicels 3–15 mm. long; fruit ovate to ovate-oblong, 5–9 mm. long, 4–5 mm. broad, the wings less than half the width of the body, the oil tubes 3–6 in the intervals, 4–6 on the commissure.

TYPE: *Cusick 36*, Union Co., Oregon, May 1883, is the first specimen cited; *Howell 829* is given as the type in *Contr. U. S. Nat. Herb.* 7: 231.

DISTRIBUTION: Eastern Oregon.

SPECIMENS EXAMINED: OREGON: *Cusick 1587* (M, Po, UC); Prairie City, Grant Co., *Henderson 5183, 5185* (M); Fossil, Wheeler Co., *Henderson 5512* (M); hillsides of the Malheur, *Cusick 1622* (M, Po, UC); Silver Creek Valley, Harney Co., *Cusick 2615* (M, Po, UC).

43. *Lomatium Nelsonianum* Macbr. *Contr. Gray Herb.* n.s. 53: 15. 1918.

Plants short-caulescent, about 4 dm. tall; leaves ovate, the blades up to 2.5 (?) dm. long, ternately to ternate-pinnately decomposed, the leaflets linear or filiform (?), about 3 mm. long, less than 0.5 mm. broad, glabrous or sparingly hispid (?), the petioles 2.5–5 cm. long, sheathing below; peduncles exceeding the leaves; umbels 12–15-rayed, the rays unequal, ascending, 2.5–7 cm. long; involucl bracts filiform, sparingly hispid, up to half the length of the pedicels; umbellets 15–20-flowered, the flowers yellow (?), the fruiting pedicels 10–16 mm. long, minutely pubescent to glabrate, spreading; fruit oblong, 7–9 mm. long, 4–5 mm. broad, the wings slightly narrower than the body, the oil tubes 3 in the intervals, 6 on the commissure.

TYPE: *J. C. Nelson 1419*, dry rocky hillside near Mule Creek, Curry Co., Oregon, 21 June 1917 (G).

DISTRIBUTION: Known only from the type collection.

This species is inadequately known. The detached leaves on the type sheet are probably leaves of *Leptotaenia dissecta*.

They show the characteristic pubescence of that species, while the leaves attached to the stems of the plant are apparently glabrous. The stem leaves are so badly withered that it is difficult to study them but the leaflets seem to be a somewhat different shape from those of the detached leaves.

44. *Lomatium minimum* Mathias, comb. nov.

Cogswellia minima Mathias, Ann. Mo. Bot. Gard. 19: 497. 1932.

Plants acaulescent, 1–3.5 cm. tall, glabrous or scabrous-puberulent; leaves narrowly oblong, the blades 0.5–2.5 cm. long, simply pinnate with 4–6 pairs of acute, distinct, entire or once-lobed leaflets, 2–10 mm. long, 1–1.5 mm. broad, the petiole 1–6 mm. long, entirely sheathing; peduncles equalling or slightly exceeding the leaves; umbels few-rayed, the rays unequal, 3–12 mm. long; involucre bracts subdimidiate, several, more or less distinct, narrow, acute, foliaceous, somewhat scarious-margined, shorter than to equalling the yellow flowers; umbellets few-flowered, the pedicels 1–2 mm. long; fruit oblong, 4–7 mm. long, 3–4 mm. broad, glabrous, the wings well-developed, about equalling the body, the oil tubes more or less obsolete.

TYPE: *Mathias 670*, near the hotel, dry slopes bordering Bryce Canyon, Utah, 8600 feet, 18 July 1929 (M).

DISTRIBUTION: Known only from the type locality and the Panguitch Plateau above Cedar Breaks, southwestern Utah.

SPECIMENS EXAMINED: UTAH: Cedar Breaks, *Jones (Po)*; Panguitch, *Jones (Po)*; on the edge of the Breaks, between the hotel and the camp ground, Cedar Breaks, near Cedar City, Iron Co., *Mathias 734 (M)*.

45. *Lomatium oreganum* Coult. & Rose, Contr. U. S. Nat. Herb. 7: 224. 1900.

Peucedanum oreganum Coult. & Rose, Rev. N. Am. Umbell. 64. 1888.

Cogswellia oregana (Coult. & Rose) Jones, Contr. Western Bot. 12: 35. 1908.

Plants very low, acaulescent, 2.5–6 cm. tall, villosulose throughout, from a multicapital woody caudex; leaves oblong, the blades 1–3 cm. long, bipinnate, the leaflets crowded, oblong, 2–3 mm. long, about 1 mm. broad, apiculate, the petioles 0.5–2 cm. long, sheathing below; peduncles exceeding the leaves; umbels greatly reduced, with one fertile umbellet, the fertile

rays 1–5 mm. long, and 2–3 sessile sterile umbellets; involucre bracts linear, acute, not scarious-margined, longer than the yellow flowers; umbellets few-flowered, the fruiting pedicels 1–1.5 mm. long; fruit oblong, about 5 mm. long, 2.5 mm. broad, villosulose, the wings much narrower than the seed, the oil tubes 2–3 in the intervals, 4 on the commissure.

TYPE: *Cusick 1390*, alpine rocks, Blue and Eagle Creek Mts., Oregon, Aug. 1886–88 (F).

DISTRIBUTION: Known only from the type localities.

SPECIMENS EXAMINED: OREGON: cliff-sides of highest Blue Mts., head of Anthony's Creek, *Cusick 2247* (UC).

46. *Lomatium Greenmanii* Mathias, spec. nov.

Planta caulescens, 5–8 cm. alta; foliis oblongis, petiolis excludentibus, 1.5–2.5 dm. longis, 1–2-pinnatis, foliolis oblongis, 5–10 mm. longis, 2–2.5 mm. latis, apiculatis, marginibus subscabris, petiolis 1.5–3 cm. longis, folio caulino unico, parvo, pinnato; pedunculis foliis longioribus; umbellis cum 1–3 umbellulis fertilibus, radiis 1.5–2 mm. longis; bracteis involucrelli paucis, filiformibus, ca. pedicellis aequalibus; umbellulis paucifloribus, pedicellis ca. 1 mm. longis, ovariis fructibusque glabris; fructibus ovatis, 3–5 mm. longis, 2 mm. latis, alis angustis, jugis dorsalibus filiformibus, vittis 1 in intervallis, 2 in commissura.

Plants low, caulescent, 5–8 cm. tall, from a multicipital woody caudex; leaves oblong, the blades 1.5–2.5 cm. long, 1–2-pinnate, the leaflets oblong, distinct, 5–10 mm. long, 2–2.5 mm. broad, apiculate, the margins slightly roughened, the petioles 1.5–3 cm. long, purplish sheathing below, the single stem leaf much reduced, pinnate, the petiole purplish, sheathing throughout; peduncles exceeding the leaves; umbels reduced to 1–3 fertile umbellets and 1–2 sessile sterile umbellets, the fruiting rays 1.5–2 mm. long; involucre bracts few, filiform, white-scarious, about equalling the pedicels; umbellets few-flowered, the flowers white, the fruiting pedicels about 1 mm. long, the ovaries glabrous; fruit ovate, 3.5 mm. long, 2 mm. broad, glabrous, the wings much narrower than the body, the dorsal ribs filiform, the oil tubes solitary in the intervals, 2 on the commissure.

TYPE: *Cusick 2458*, Wallowa Mts., head of Keystone Creek, 9000 feet, Oregon, fruiting August 4, 1900 (Po 78156).

DISTRIBUTION: Known only from the type collection.

This species is named in honor of Dr. J. M. Greenman, of the Missouri Botanical Garden, who first suggested to the writer the interesting problems in the study of this genus and whose advice and assistance has been greatly valued.

47. *Lomatium Eastwoodae* (Coult. & Rose) Macbr. Contr. Gray Herb. n.s. 56: 35. 1918.

Cynomarathrum Eastwoodae Coult. & Rose, Contr. U. S. Nat. Herb. 7: 247. 1900.

Cogswellia Eastwoodae (Coult. & Rose) Jones, Contr. Western Bot. 12: 35. 1908.

Plants acaulescent, 1–1.5 dm. tall from a subwoody caudex covered with old leaf sheaths; leaves narrowly oblong, scaberulent, the blades 2.5–7 cm. long, 1–2-pinnate, with 5–7 remote pairs of segments, the leaflets oblong-lanceolate, 2–4 mm. long, 1–1.5 mm. broad, crowded, apiculate, the petioles 1.5–4.5 cm. long, shortly sheathing below; peduncles exceeding the leaves; umbels 4–6-rayed, the fruiting rays unequal, 1–3 cm. long, ascending; involucre bracts few, linear, entire, much shorter than the pedicels; umbellets 2–15-flowered, the flowers yellow (?), the fruiting pedicels 6–17 mm. long, ascending; fruit oblong, 8–10 mm. long, about 6 mm. broad, glabrous, the wings equaling to broader than the body, the oil tubes 3–4 in the intervals, 6–8 on the commissure.

TYPE: *Eastwood*, Grand Junction, Colorado, May 1892 (US).

DISTRIBUTION: Known only from the type locality.

SPECIMENS EXAMINED: COLORADO: Grand Junction, *Bethel* s. n. (Cl), 24 (US), *Jones* (Po), *Eastwood* (UC).

48. *Lomatium scabrum* (Coult. & Rose) Mathias, comb. nov.

Cynomarathrum scabrum Coult. & Rose, Contr. U. S. Nat. Herb. 7: 247. 1900.

Cogswellia scabra (Coult. & Rose) Jones, Contr. Western Bot. 12: 35. 1908.

Plants acaulescent, 1–3.5 dm. tall, from a subwoody caudex covered with old leaf sheaths; leaves narrowly oblong, the blades 5.5–10 cm. long, sparsely to densely scaberulent, 2–3-pinnate, the leaflets crowded, linear, 2–4 mm. long, 1–1.5 mm.

broad, apiculate, the petioles 3–10 cm. long, sheathing below, glabrous to scaberulent; peduncles exceeding the leaves, sparsely scaberulent to glabrate, especially above; umbels 7–14-rayed, the fruiting rays 1.5–4 cm. long, ascending, glabrous; involucre bracts distinct or shortly connate, linear, setaceous, shorter than to equalling the yellow flowers; umbellets many-flowered, the fruiting pedicels 5 (2 ?)–9 mm. long, ascending; fruit oblong-ovate, 7–9 mm. long, 4–6 mm. broad, glabrous, the wings less than to half the width of the body, the oil tubes 3–5 in the intervals, 4–10 on the commissure.

TYPE: *Jones 1864*, Frisco, Utah, 2400 m., 22 June 1880 (US type, Po).

DISTRIBUTION: Southwestern Utah.

SPECIMENS EXAMINED: UTAH: St. George, *Jones 1615* (Po); Detroit, Silver Reef, Frisco, *Jones* (Po); Cedar Canyon, Iron Co., *Cottam, Stanton & Harrison 3935* (Po); Copper Mine, *Jones 5006b* (Po); St. George, *Jones 5110o* (Po, UC); Diamond Valley, *Jones 5125g* (Po, US); St. George, *Gooding 799* (M, UC); Leeds, *Tidestrom 9391* (US).

49. *Lomatium ciliolatum* Jepson, *Madroño* 1: 155. 1924; *Man. Fl. Pl. Calif.* 723. 1925.

Plants acaulescent, about 1.5 dm. tall, from a long slender tap-root; leaves ovate, 2–3.5 cm. long, margins finely and regularly ciliate, pinnate, the leaflets 0.8–2 cm. long, irregularly pinnatifid into ovate segments; peduncles exceeding the leaves; umbels 3–5-rayed, the rays unequal, 0.8–3.2 cm. long; involucre bracts several, ovate, with dark purple veins; umbellets few-flowered, the pedicels 2–4 mm. long; fruit elliptic, 7–8 mm. long, glabrous, the wings narrow, the oil tubes obscure, 4–5 in the intervals, 2 on the commissure.

No material of this species has been seen and this description has been adapted from those published by Jepson.

TYPE: *Jepson (14319)*, Soldiers Ridge near South Yolla Bolly, California.

DISTRIBUTION: Known only from the type locality, California.

50. *Lomatium concinnum* (Osterh.) Mathias, comb. nov.

Cogswellia concinna Osterh. *Muhlenbergia* 8: 44. 1912.

Plants short-caulescent, 1.2–2.5 dm. tall, glabrous, purplish below, from a long slender tap-root; leaves oblong, the blades 2–7 cm. long, bipinnate with the lower leaflets sometimes pin-

nately lobed, the leaflets distinct, linear, 2–11 mm. long, 1–2 mm. broad, rounded at the apex, sometimes apiculate, the petioles 1.5–5.5 cm. long, sheathing below; peduncles exceeding the leaves; umbels 8–13-rayed, the fruiting rays 5–6, subequal, 2.5–4 cm. long, spreading; involucl bracts conspicuous, dimidiate, foliaceous, ovate-lanceolate, acute, entire or rarely lobed towards the apex, usually many-nerved, connate below, equaling to longer than the yellow flowers; umbellets many-flowered, the fruiting pedicels 1–2 mm. long; fruit ovate, 5–8 mm. long, 4–5 mm. broad, the wings less than half the width of the body, the oil tubes 4–5 in the intervals, about 10 on the commissure.

TYPE: *Osterhout 4515*, Paeonia, Delta Co., Colorado, 21 May 1911 (NY, Po type coll.).

DISTRIBUTION: Southwestern Colorado.

SPECIMENS EXAMINED: COLORADO: Cimarron, *Baker 22* (M, Po, UC); north fork of the Gunnison, *Purpus 587* (UC).

51. *Lomatium Parryi* (Wats.) Macbr. Contr. Gray Herb. n.s. 56: 35. 1918.

Peucedanum macrocarpum Parry, Am. Nat. 9: 272. 1875, nom. nud., not Nutt. (1840).

P. Parryi Wats. Proc. Am. Acad. 11: 143. 1876.

P. scopulorum Jones, Contr. Western Bot. 8: 31. 1898.

Cynomarathrum Parryi (Wats.) Coult. & Rose, Contr. U. S. Nat. Herb. 7: 246. 1900.

Cogswellia Parryi (Wats.) Jones, Contr. Western Bot. 12: 32. 1908.

Lomatium Parryi (Wats.) Jepson, Madroño 1: 157. 1924, in err.

Cogswellia Cottami Jones, Contr. Western Bot. 16: 36. 1930.

Plants acaulescent, glabrous, 2–4 dm. tall, from a long somewhat stout tap-root; leaves narrowly oblong, the blade 10–20 cm. long, 2–3-pinnate, the lowermost pinnae more divided than the upper, the leaflets linear, 2–9 mm. long, about 1 mm. broad, entire, cuspidate, the petioles 6–10.5 cm. long, short-sheathing; peduncles clustered from the old sheaths, equalling to somewhat exceeding the leaves; umbels about 15-rayed, the rays subequal, 2–4.5 cm. long, suberect; involucl bracts several, linear, acute, subscarious, sometimes cleft, equalling or exceeding the yellow flowers; umbellets about 10-flowered, the fruiting pedicels 10–17 mm. long; fruit oblong, 9–12 mm. long, 4–6 mm.

broad, the wings equalling or somewhat wider than the body, the oil tubes 2-3 in the intervals, 4 on the commissure.

TYPE: *Parry 85*, southern Utah (G).

A mixture of material was distributed under *Parry 85*; the type of this species is a glabrous specimen.

DISTRIBUTION: Mountain ranges, southeastern Utah to the Panamint Mts., California.

SPECIMENS EXAMINED: UTAH: Sierra La Sal, *Purpus* (M, UC, US); Apex Mine, Beaver Dam Mts., Washington Co., *Cottam 4098* (M, Po type of *C. Cottami*); *Palmer 178* (M); Silver Reef, *Jones 5149s* (M, Po, US). NEVADA: Meadow Valley Wash, *Goodding 629* (M, US); Duck Creek Canyon, 4 mi. s. e. of Paine's Ranch, *A. E. Hitchcock 1402* (US). CALIFORNIA: Surprise Canyon, Panamint Mts., Inyo Co., *Howell 3898* (M); Pleasant Canyon, Panamint Mts., *Jones* (M type coll. of *P. scopulorum*); head of Wild Rose Canyon, Panamint Mts., *Mathias 827* (M).

52. *Lomatium Nuttallii* (Gray) Macbr. Contr. Gray Herb. n.s. 56: 35. 1918.

Seseli Nuttallii Gray, Proc. Am. Acad. **8**: 287. 1870, in part.

Peucedanum graveolens Wats. Bot. King Exp. 128. 1871, not Benth. & Hook. (1867).

P. Kingii Wats. Proc. Am. Acad. **22**: 474. 1887.

Cynomarathrum Nuttallii (Gray) Coult. & Rose, Contr. U. S. Nat. Herb. **7**: 245. 1900.

Cogswellia Nuttallii (Gray) Jones, Contr. Western Bot. **12**: 32. 1908.

Plants acaulescent, glabrous, 1.5-4.2 dm. tall, from a multipital subwoody caudex covered with old leaf sheaths; leaves oblong, the blades 5.5-13 cm. long, 1-2-pinnate or ternate- or quinate-pinnate, the leaflets remote, linear, 10-50 mm. long, 1-2 mm. broad, entire, cuspidate, the petioles 3-15 cm. long, shortly sheathing below; peduncles stout, usually greatly exceeding the leaves in the mature plant; umbels 5-16-rayed, the fruiting rays 15-43 mm. long, erect to suberect; involucre bracts distinct or shortly connate, linear, acute to acuminate, entire or once-lobed near the base, longer than or equalling the yellow flowers, sometimes reflexed; umbellets 15-20-flowered, the fruiting pedicels 3-7 mm. long, suberect; fruit narrowly oblong, 9-13 mm. long, 3-4 mm. broad, the wings about half the width of the body, the oil tubes 3-5 in the intervals, 6-10 on the commissure.

TYPE: *Nuttall*, Rocky Mountains.

DISTRIBUTION: Southwestern Wyoming to northwestern New Mexico and eastern Nevada, with one collection from Nebraska (*Rydberg 129*, Scotts Bluff in the Pass [US]).

TYPICAL SPECIMENS: WYOMING: lower slopes, Piney Mt., 25 miles west of Big Piney, Sublette Co., *Payson & Payson 2707* (M, Po, UC, US). UTAH: clay slopes near Mill Creek, foothills of Uinta Mts., Summit Co., 8200 ft., *Payson & Payson 4807* (M, US), *4887* (Po, UC).

52a. *Lomatium Nuttallii* (Gray) Macbr. var. *alpinum* (Wats.) Mathias, comb. nov.

Peucedanum graveolens Wats. var. *alpinum* Wats. Bot. King Exp. 129. 1871.
P. Kingii Wats. var. *alpinum* (Wats.) Coult. & Rose, Rev. N. Am. Umbell. 71. 1888.

Cynomarathrum alpinum (Wats.) Coult. & Rose, Contr. U. S. Nat. Herb. 7: 245. 1900.

Cogswellia Nuttallii (Gray) Jones var. *alpina* (Wats.) Jones, Contr. Western Bot. 12: 32. 1908.

Lomatium alpinum (Wats.) Macbr. Contr. Gray Herb. n.s. 56: 35. 1918.

Similar to the species but usually lower, up to 3 dm. tall; leaves usually less divided; rays 3–6; pedicels 4–10 mm. long.

TYPE: *Watson 464*, East Humboldt Mts., Nevada (US).

DISTRIBUTION: Western Utah and adjacent Nevada.

SPECIMENS EXAMINED: UTAH: Gold Hill, Black Mt., *Jones* (Po). NEVADA: Shellbourne, Osceola, Duck Creek, Muncy, *Jones* (Po); Glencoe, *Jones* (Po, US); rocky slopes, Highland Peak, *Purpus 6282* (Po, UC, US); 7 mi. east of Ely, *A. E. Hitchcock 1313* (US).

53. *Lomatium Hallii* (Wats.) Coult. & Rose, Contr. U. S. Nat. Herb. 7: 224. 1900.

Peucedanum nudicaule Gray, Proc. Am. Acad. 8: 385. 1872, not Nutt. (1840).

P. Hallii Wats. Proc. Am. Acad. 11: 141. 1876.

P. microcarpum Howell ex Coult. & Rose, Rev. N. Am. Umbell. 65. 1888.

Lomatium Leibergii Coult. & Rose, Contr. U. S. Nat. Herb. 7: 224. 1900.

L. microcarpum (Howell) Coult. & Rose, Contr. U. S. Nat. Herb. 7: 230. 1900.

Cogswellia Hallii (Wats.) Jones, Contr. Western Bot. 12: 35. 1908.

C. microcarpa (Howell) Jones, Contr. Western Bot. 12: 35. 1908.

C. Leibergii (Coult. & Rose) Jones, Contr. Western Bot. 12: 35. 1908.

Plants short-caulescent, 2.0–3.5 dm. tall, glabrous except for an occasional slight scaberulence in the inflorescence; leaves oblong, the blades 4.5–10 cm. long, tripinnate, the leaflets distinct except the uppermost, linear or oblong, 2–4 mm. long, less than 1 mm. broad, entire, apiculate, the petioles 3–6 cm.

long, sheathing to about the middle, the sheath scarious-margined, purplish; fruiting peduncles exceeding the leaves; umbels 9–17-rayed, the rays unequal, 1.3–5 cm. long, spreading, glabrous or scaberulent below; involucre bracts linear-lanceolate, acuminate, equalling the yellow flowers; umbellets about 30-flowered, the fruiting pedicels 4–7 mm. long, glabrous or scaberulent; fruit oblong, 5–7 mm. long, about 3 mm. broad, the wings about one-half the width of the body, the oil tubes 2–3 in the intervals, 5 on the commissure.

TYPE: *Hall 211*, "Oregon" (probably Silver Creek, Marion Co.) (G type, NY).

DISTRIBUTION: River valleys, western slopes of the Cascade Mts., Oregon.

SPECIMENS EXAMINED: OREGON: on cliffs, Roseburg, Umpqua Valley, Howell (M, NY, Th); rocky bluff near Myrtle Creek, Douglas Co., *Thompson 10174* (NY, Th); *Leiberg 4166* (collection of 1899) (US type of *L. Leibergii*); moist bluffs, edge of coniferous woods, 2 mi. above Oakridge, Middle Fork of Willamette River, Cascade Mts., Lane Co., *Constance, Henderson & Rollins 1471* (Th, UC).

The specimens of Howell without number cited above agree in date of collection and locality with *Howell 709*, the type of *Peucedanum microcarpum*, and are a perfect match for the type specimen of *P. Hallii*, *Hall 211* in part.

The type sheet of *Peucedanum Hallii* in the Gray Herbarium has mounted on it five distinct plants. Two of these plants have finely cut leaves, nearly mature fruit and 3 oil tubes in the intervals. These are to be considered the type of the species. The other three specimens may belong together and are *Lomatium angustatum*. The specimens of *Hall 211* have been distributed as coming variously from Mt. Hood and from Silver Creek, Marion County, Oregon. The specimens of *L. angustatum* may well have been collected at Mt. Hood. Because of the Mt. Hood locality it has been generally considered that *L. Hallii* was an alpine plant and consequently it has been misunderstood and in most cases confused with *L. angustatum*.

The collection of Leiberg (*4166* in 1899), the type of *Lomatium Leibergii*, was probably made in the valleys on the western slopes of the Cascades since we have records of other collections by Leiberg in the summer of 1899 from that region, namely, from east of Medford, Abbott Butte, Big Butte Creek, Lower Applegate Creek, and Ashland.¹

54. *Lomatium Martindalei* Coult. & Rose, Contr. U. S. Nat. Herb. 7: 225. 1900.

Peucedanum Martindalei Coult. & Rose, Bot. Gaz. 13: 142. 1888; Rev. N. Am. Umbell. 66. 1888.

Cogswellia Martindalei (Coult. & Rose) Jones, Contr. Western Bot. 12: 34. 1908.

¹ C. P. Smith, A distributional catalogue of the lupines of Oregon. Contr. Dudley Herb. 1(1). 1927.

Plants short-caulescent, purplish, 1.5–2.5 dm. tall, from a long, somewhat thickened tap-root; leaves oblong to ovate-oblong, the blades 2.5–5 cm. long, 1–2-pinnate, minutely roughened to glabrous on the margins and veins below, the leaflets oblong to cuneate, 5–10 mm. long, 2–7 mm. broad, pinnately lobed to serrate above, the petioles 2.5–5 cm. long, sheathing below; peduncles exceeding the leaves; umbels 4–7-rayed, the fruiting rays unequal, 1–5.5 cm. long, suberect; involucler bracts few, filiform, shorter than the pedicels; umbellets 10–20-flowered, the fruiting pedicels 2–3, 7–10 mm. long; fruit oblong, 13–16 mm. long, 7–8 mm. broad, the wings about equalling the body, the oil tubes solitary in the intervals, 2 on the commissure.

TYPE: *Howell*, "rocky places, Cascade Mountains, Oregon," May–June 1880.

DISTRIBUTION: Cascade Mts., Oregon.

SPECIMENS EXAMINED: OREGON: Coral Springs, *Leiberg* 609 (UC); rocky places, Cascade Mountains, *Howell* (NY type coll.); alpine slopes of Crater Lake, Klamath Co., *Thompson* 12286 (Th); Wizard Island, Crater Lake, *Heller* 13462 (M).

55. *Lomatium latilobum* (Rydb.) Mathias, comb. nov.

Cynomarathrum latilobum Rydb. Bull. Torrey Bot. Club 40: 73. 1913.

Plants acaulescent, 0.8–1.8 dm. tall, glabrous, from a semi-woody deep-seated root, caudex multicapital, broadly caespitose, the branches several, clothed with old leaf sheaths; leaves several from each crown, erect, oblong, the blades 2–8 cm. long, pinnate, rarely bipinnate, the leaflets lanceolate, sessile, in 3–5 pairs, 3–30 mm. apart, 5–28 mm. long, 2–6 mm. broad, entire, acute, mucronulate, the petioles 2–10.5 cm. long, shortly sheathing below; peduncles equalling to exceeding the leaves; umbels 4–10-rayed, the fruiting rays 2–5, subequal, 5–12 mm. long, spreading; involucler bracts dimidiate, distinct or connate below, linear to lanceolate, acute, prominently nerved, mostly exceeding the pedicels, sometimes reflexed; umbellets few-flowered, the flowers yellow (?), the fruiting pedicels 1–4 mm. long; fruit oblong, 7–12 mm. long, 3–5 mm. broad, the wings narrower than to equalling the body, the oil tubes 1–2 in the intervals, 2–4 on the commissure.

TYPE: *Rydberg & Garrett 8371*, proposed dam site, near Wilson Mesa, Grand Co., Utah, 1 July 1911, (NY type, Garrett, US).

DISTRIBUTION: Southeastern Utah.

SPECIMENS EXAMINED: UTAH: Moab, *Jones* (Po); Sierra La Sal, *Purpus* (Po), *Purpus 7150* (Po, UC).

56. *Lomatium megarrhizum* (A. Nels.) Mathias, comb. nov.

Musenium tenuifolium acc. to Hook. Lond. Jour. Bot. 6: 237. 1847, not Nutt. (1840).

Peucedanum megarrhiza A. Nels. Bull. Torrey Bot. Club 26: 130. 1899.

Cynomarathrum megarrhizum A. Nels. ex Rydb. Fl. Rocky Mts. 629, 1064. 1917.

Plants acaulescent, 1–3 dm. tall, glabrous, clustered from a broad, semi-woody, deep-seated root, the caudex multicipital, broadly caespitose, the branches numerous, crowded, thickly clothed with old leaf sheaths; leaves few to several from each crown, rigidly erect, linear-oblong, the blades 5.5–9.5 cm. long, pinnate, the leaflets in 2–5 remote pairs, 11–25 mm. long, about 1 mm. broad, entire and narrowly linear, cuspidate to irregularly and remotely pinnatifid, the segments few, linear, 1–10 mm. long, 1 mm. broad, cuspidate, the petioles 4.5–8 cm. long, shortly sheathing below; peduncles equalling to shortly exceeding the leaves; umbels 10–11-rayed, the rays all fertile, subequal, 8–23 mm. long, spreading to reflexed; involucre bracts connate below, subdimidiate, linear, acute to short-acuminate, longer than the pedicels; umbellets about 20-flowered, the flowers yellow, the fruiting pedicels 1–2 mm. long, spreading to reflexed; fruit oblong, 5–8 mm. long, 2.5–3 mm. broad, the wings narrower than the body, the oil tubes about 3 in the intervals, 6–10 on the commissure.

TYPE: *Nelson 4769*, Point of Rocks, Wyoming, 16 June 1898.

DISTRIBUTION: Southwestern Wyoming.

SPECIMENS EXAMINED: WYOMING: Upper Platte, *Geyer 220* (M photo); Point of Rocks, *Nelson 4769* (M type coll.); Carter, Uinta Co., *Goodding 1186* (M, Po, UC, US); shale slopes, 6 mi. east of Big Piney, *Payson & Payson 2596* (M, Po, UC, US); Steamboat Mt., Sweetwater Co., *Nelson 7080* (M, Po, US); rim of Botes Hole, *Payson & Payson 4725* (M).

57. *Lomatium simplex* (Nutt.) Macbr. Contr. Gray Herb. n.s. 56: 34. 1918.

Peucedanum triternatum (Pursh) Nutt. var. *platycarpum* Torr. Stansb. Rep. 389. 1852.

P. triternatum Torr. acc. to Sitgreaves Rep. 160. 1853, not Nutt. (1840).

P. simplex Nutt. ex Wats. Bot. King Exp. 129. 1871.

Lomatium platycarpum (Torr.) Coult. & Rose, Contr. U. S. Nat. Herb. 7: 226.

1900, as to glabrous fruit forms.

Cogswellia platycarpa (Torr.) Jones, Contr. Western Bot. 12: 32. 1908.

C. simplex (Nutt.) Jones, Bull. Univ. Mont. Biol. Ser. 15: 41. 1910.

C. simplex (Nutt.) Rydb. Bull. Torrey Bot. Club. 40: 74. 1913, in err.

Plants caulescent or acaulescent, 2–6 dm. tall, clustered from a long slender tap-root; stems mostly simple, few-leaved, densely puberulent; leaves obovate, the blades 11–20 cm. long, biternate, the leaflets linear, acute, 2.5–11.5 cm. long, 3–6 mm. broad, glabrous above, glabrous to densely puberulent below, the petioles glabrous to puberulent, 6–14 cm. long, sheathing to near the middle; peduncles densely puberulent, exceeding the leaves; umbels 8–17-rayed, the rays unequal, 1.5–5.8 cm. long, spreading to ascending; involucre bracts linear or filiform, acute to acuminate, glabrous or puberulent, shorter than the pedicels; umbellets 10–30-flowered, the flowers yellow, the fruiting pedicels 1–9 mm. long; fruit broadly oblong to sub-orbicular, 7–14 mm. long, 7–10 mm. broad, the wings broader than the body, the oil tubes solitary in the intervals, 2 on the commissure.

TYPE: *Nuttall*, Rocky Mts. (Ph).

DISTRIBUTION: Western Montana to Utah, southwestern Colorado, west to Washington and Oregon.

TYPICAL SPECIMENS: IDAHO: Shoshone Falls, *Macbride 1722* (M, UC). UTAH: Goodman Ranch, Bear River, Summit Co., *Payson & Payson 4866* (M). WASHINGTON: *Canby 798* (UC).

According to Section 6, Article 49 of the International Rules of Botanical Nomenclature "When . . . a subdivision becomes a species, . . . the earliest name received by the group in its new position must be regarded as valid. . . ." Thus the specific name *simplex* must be used instead of *platycarpa*.

57a. *Lomatium simplex* (Nutt.) Macbr. var. *leptophyllum* (Hook.) Mathias, comb. nov.

Peucedanum triternatum (Pursh) Nutt. var. *leptophyllum* Hook. Lond. Jour. Bot. 6: 235. 1847.

Cogswellia leptophylla (Hook.) Rydb. Bull. Torrey Bot. Club 40: 74. 1913.

Similar to the species but the ovaries and young fruit puberulent.

TYPE: *Geyer 505*, "crevices of Trappe masses, on the slopes of the high plains of Kooskooskee River," Idaho, July.

DISTRIBUTION: Western Montana and Wyoming to British Columbia, eastern Washington, and Oregon.

TYPICAL SPECIMENS: MONTANA: Missoula, *Kirkwood 1730* (UC, UM), *2424* (Po, UM); Hamilton, *Blankinship 705* (M, UC, UM). WYOMING: Green River Lakes, Sublette Co., *Payson & Payson 4454* (M). IDAHO: Boise, *Clark 40* (M, NY, UC).

58. *Lomatium triternatum* (Pursh) Coult. & Rose, Contr. U. S. Nat. Herb. 7: 227. 1900.

Seseli triternatum Pursh, Fl. 1: 197. 1814.

Eulophus triternatus (Pursh) Nutt. Jour. Acad. Philad. 7: 27. 1834.

Peucedanum triternatum (Pursh) Nutt. ex Torr. & Gray, Fl. N. Am. 1: 626. 1840.

Seseli biternatum Pursh, ex Torr. & Gray, Fl. N. Am. 1: 626. 1840, err. in synonym.

Peucedanum Nuttallii Walp. Rep. 2: 411. 1843, not *Seseli Nuttallii* Gray (1870).

Cogswellia triternata (Pursh) Jones, Contr. Western Bot. 12: 32. 1908.

Plants caulescent or acaulescent, 1.7–8 dm. tall, puberulent to glabrate, from a long slender tap-root; leaves broadly ovate, the blades 7–15 cm. long, ternate or quinate, then pinnate to bipinnate, the leaflets few, linear, 1.5–12.6 cm. long, 0.5–7 mm. broad, entire, acute, the petioles 7–20 cm. long, sheathing about to the middle, purplish below, the stem leaves 1–2, smaller, the petioles entirely sheathing; peduncles exceeding the leaves; umbels 10–20-rayed, the fruiting rays unequal, 1.2–5.5 cm. long, spreading to suberect; involucre bracts several, filiform, about equalling the pedicels; umbellets many-flowered, the flowers yellow, the ovaries glabrous, the fruiting pedicels 3–5 mm. long; fruit oblong, 9–13 mm. long, 3–5 mm. broad, glabrous, the wings narrower than the body, the oil tubes solitary in the intervals, 2 on the commissure.

TYPE: *Lewis*, "on the waters of Columbia River" (probably on the main Kooskooskee River, vicinity of Cotter's or Potlatch Creek, below mouth of the North Fork), Idaho.

DISTRIBUTION: Western Montana and Wyoming to western Washington, southwestern Oregon, and northeastern California.

TYPICAL SPECIMENS: IDAHO: Josephus Lakes, Custer Co., *Macbride & Payson 3587* (M). WASHINGTON: Pullman, Whitman Co., *Elmer 846* (M). OREGON: near Prairie City, Grant Co., *Henderson 5187* (M).

Cogswellia triternata (Pursh) Coult. & Rose forma **lanceifolia** St. John, Fl. S.E. Wash. & Adj. Ida. 293. 1937, has been published, but no specimens have been seen. According to description, it differs from *Lomatium triternatum* in its linear-lanceolate leaves 1 cm. or more in width.

58a. *Lomatium triternatum* (Pursh) Coult. & Rose var. *anomalum* (Jones) Mathias, comb. nov.

Lomatium anomalum Jones, ex Coult. & Rose, Contr. U. S. Nat. Herb. 7: 237. 1900.

L. giganteum Coult. & Rose, Contr. U. S. Nat. Herb. 7: 240. 1900.

? *Cogswellia anomala* Jones, Contr. Western Bot. 12: 32. 1908.

? *C. gigantea* (Coult. & Rose) Jones, Contr. Western Bot. 12: 32. 1908.

? *Lomatium nudicaule* (Pursh) Coult. & Rose var. *puberulum* Jepson, Madroño 1: 159. 1924.

? *Peucedanum nudicaule* Nutt. var. *puberulum* Gray, ex Jepson, Madroño 1: 159. 1924, nom. nud. in synonym.

Plants caulescent; leaflets ovate-lanceolate to narrowly obovate, 15–65 mm. long, 3–8 mm. broad, acute, entire or the uppermost rarely 3-toothed to deeply lobed; umbels 10–22-rayed, the fruiting rays 1.5–8 cm. long, puberulent to glabrate; fruiting pedicels 2–8 mm. long; fruit 13–22 mm. long, 8–16 mm. broad, glabrous (ovaries and young fruit glabrous).

TYPE: Jones, rocky gumbo soil, slopes of Indian Valley, Washington Co., Idaho, 1200 meters, 15 July 1899 (Po).

DISTRIBUTION: Northwestern to southwestern Idaho (west to Oregon and California?).

TYPICAL SPECIMENS: IDAHO: Lewiston, Nez Perce Co., Heller & Heller 3132 (M, NY, UC); forks of St. Mary's River, Coeur d'Alene Mts., Leiberg 1128 (M, Po, UC); hills near Boise, Mulford (NY); Upper Ferry, Clearwater River above Lewiston, Sandberg, MacDougal & Heller 28 (NY).

Lomatium giganteum Coult. & Rose and *L. nudicaule* var. *puberulum* Jepson are identical. The Bolander specimen (UC type coll. of *L. nudicaule* var. *puberulum*), though immature, is a good match for the type of *L. anomalum* Jones, so these plants have been questionably referred to var. *anomalum* even though they are known only from northwestern California, and typical *L. anomalum* has so far been collected only in western Idaho. Further collections in the intervening area may show that the distribution is continuous in which case there will be no question as to identity.

58b. *Lomatium triternatum* (Pursh) Coult. & Rose var. *macrocarpum* (Coult. & Rose) Mathias, comb. nov.

Peucedanum triternatum (Pursh) Nutt. var. *macrocarpum* Coult. & Rose, Rev. N. Am. Umbell. 70. 1888.

P. triternatum (Pursh) Nutt. var. *robustius* Coult. & Rose, Contr. U. S. Nat. Herb. 3: 228. 1895.

Lomatium robustius Coult. & Rose, Contr. U. S. Nat. Herb. 7: 228. 1900.

Cogswellia triternata (Pursh) Jones var. *robustior* (Coult. & Rose) Jones, Contr. Western Bot. 12: 32. 1908.

C. robustior Coult. & Rose, Contr. U. S. Nat. Herb. 12: 451. 1909.

Leaves 12–22 cm. long, ternate or quinate, then biternate to bipinnate, the leaflets linear, sometimes ovate-lanceolate as in var. *anomala*, 1.5–14.5 cm. long, 1–11 mm. broad, entire; umbels 5–18-rayed, the fruiting rays unequal, 0.6–10.5 cm. long; fruiting pedicels 2.5–9 mm. long, the ovaries and young fruit puberulent, the mature fruit glabrous or rarely sparsely puberulent, oblong, 8–20 mm. long, 4–6 mm. broad.

TYPE: *Suksdorf 502*, low grounds, W. Klickitat Co., Washington, May–July 1883 (US).

DISTRIBUTION: Alberta to British Columbia, south to northern California and northwestern Nevada.

TYPICAL SPECIMENS: IDAHO: Big Willow, Canyon Co., *Macbride 107* (M, NY, UC). WASHINGTON: near Peshastin, *Sandberg & Leiberg 596* (M, NY, UC). OREGON: Maurey's Mts., *Cusick 2700* (M, NY, UC).

58c. *Lomatium triternatum* (Pursh) Coult. & Rose var. *brevifolium* (Coult. & Rose) Mathias, comb. nov.

Peucedanum triternatum (Pursh) Nutt. var. *brevifolium* Coult. & Rose, Rev. N. Am. Umbell. 70. 1888.

Lomatium brevifolium Coult. & Rose, Contr. U. S. Nat. Herb. 7: 232. 1900.

Cogswellia brevifolia (Coult. & Rose) Jones, Contr. Western Bot. 12: 32. 1908.

Plants caulescent, 1.5–3.5 dm. tall, densely soft-puberulent; leaves quinate compound, the final divisions pinnate, the leaflets remote, linear, 3–22 mm. long, 1–3 mm. broad; umbels 9–11-rayed; fruiting pedicels 1–4 mm. long; fruit linear-oblong, 6–8 mm. long, about 2 mm. broad, densely puberulent.

TYPE: *Howell 379*, Klickitat Co., Washington, 1881.

DISTRIBUTION: Klickitat Co., Washington and adjacent Oregon.

SPECIMENS EXAMINED: WASHINGTON: *Wilkes Exp. 1053* (NY); Klickitat Hills, *Howell 1368* (M, NY, Th, UC); opp. The Dalles, Klickitat Co., *Thompson 11545* (Th); near Maryhill, Klickitat Co., *Thompson 8176* (M, Th). OREGON: near The Dalles, *Mathias 779* (M); *Howell & Howell* (NY); Dalles, *Kellogg 183* (UC).

58d. *Lomatium triternatum* (Pursh) Coult. & Rose var. *alatum* (Coult. & Rose) Mathias, comb. nov.

Peucedanum triternatum (Pursh) Nutt. var. *alatum* Coult. & Rose, Rev. N. Am. Umbell. 70. 1888.

Lomatium alatum Coult. & Rose, Contr. U. S. Nat. Herb. 7: 228. 1900.

Cogswellia triternata (Pursh) Jones var. *alata* (Coult. & Rose) Jones, Contr. Western Bot. 12: 32. 1908.

C. alata Coult. & Rose, Contr. U. S. Nat. Herb. 12: 448. 1909.

Involucels few or absent; ovaries and young fruit pubescent, the wings half as broad to about equalling the body.

TYPE: *M. K. Curran*, "Folsom," California.

DISTRIBUTION: Northeastern California and adjacent Oregon.

SPECIMENS EXAMINED: OREGON: Lakeview, *Peck 15470* (Th).

A doubtful variety poorly distinguished from variety *macrocarpum* since the wing character may be a chance variation. The locality for the type collection is probably an error.

59. *Lomatium Cusickii* (Wats.) Coult. & Rose, Contr. U. S. Nat. Herb. 7: 226. 1900.

Peucedanum Cusickii Wats. Proc. Am. Acad. 21: 453. 1886.

Cogswellia Cusickii (Wats.) Jones, Contr. Western Bot. 12: 32. 1908.

C. brecciarum Jones, Contr. Western Bot. 12: 32, 37. 1908.

C. altensis Jones, Bull. Univ. Mont. Biol. Ser. 15: 41. 1910.

Cynomarathrum brecciarum (Jones) Rydb. Fl. Rocky Mts. 630, 1064. 1917.

Plants caulescent, 1–2.2 dm. tall, caespitose, from long slender fusing tap-roots; leaves obovate to transversely ovate, the blades 3.5–12 cm. long, glabrous to slightly scaberulent, ternately compound, the leaflets few, filiform to linear, 6–75 mm. long, 0.5–2 mm. broad, apiculate, the petioles 1–9 cm. long, more or less sheathing, purplish; peduncles exceeding the leaves, glabrous; umbels 5–12-rayed, the rays unequal, 1–3.5 cm. long; involucl bracts filiform to linear-acuminate, scarious-margined, about equalling the white or purplish flowers; umbellets about 10-flowered, the fruiting pedicels 2–6 mm. long; fruit oblong, 11–13 mm. long, 4–6 mm. broad, the wings about equalling the body, the oil tubes 1–3 in the intervals, 5 on the commissure.

TYPE: *Cusick*, "on the highest summits of the Eagle Creek Mountains, Union County, Oregon," September 1885, in fruit.

DISTRIBUTION: Mountains of western Montana to eastern Oregon, 6000 to 9300 feet.

SPECIMENS EXAMINED: MONTANA: Mt. Haggin near Anaconda, Ryan's Lake, Deer Lodge Valley, *Jones* (Po); Alta, *Jones* (Po type of *C. altensis*). IDAHO: Seven Devils Mts., Washington Co., *Jones* (Po), *Cusick* 2228 (M). OREGON: *Cusick* 3335 (M, NY, Po, UC); south slope of Wallowa Mts., *Cusick* 2441 (M, Po, NY); Powder River Mts., *Piper* 2333 (M, NY, Po), *Cusick* (UC); *Cusick* 1280 (Po, UC).

The type of *Cogswellia brecciarum* Jones is a collection by Jones from Mt. Haggin, Montana, 3 August 1905. No material has been found collected by Jones at that locality on that date; however, collections of July 20, 1905, at 8000 feet on Mt. Haggin (Po 78273, 78277) match the description of *C. brecciarum* even to the immature fruit. These specimens are certainly true *L. Cusickii* and on the basis of the description of *C. brecciarum* and the collections of Jones on Mt. Haggin cited above there seems to be little question that *C. brecciarum* is conspecific with *L. Cusickii*.

60. *Lomatium laevigatum* (Nutt.) Coult. & Rose, Contr. U. S. Nat. Herb. 7: 225. 1900.

Peucedanum laevigatum Nutt. ex Torr. & Gray, Fl. N. Am. 1: 627. 1840.

Cogswellia laevigata (Nutt.) Jones, Contr. Western Bot. 12: 32. 1908.

Plants caulescent, 2.5–3.7 dm. tall, glabrous, tufted at the base; leaves ovate, the blades 7–12 cm. long, ternate, then 2–3-pinnate, the leaflets distinct, linear, 5–35 mm. long, 1–3 mm. broad, acute, minutely apiculate, the petioles 0.5–1.5 dm. long, sheathing below; peduncles exceeding the leaves; umbels 9–20-rayed, the rays unequal, 7–45 mm. long, ascending; involucre bracts usually absent; umbellets 10–30-flowered, the flowers yellow, the fruiting pedicels 4–10 mm. long; fruit oblong, 6–10 mm. long, 4–6 mm. broad, the wings slightly narrower than to equalling the body, the oil tubes solitary in the intervals, 2 on the commissure.

TYPE: *Nuttall*, Blue Mts., Oregon (Ph).

DISTRIBUTION: Columbia River Valley, Washington and Oregon.

SPECIMENS EXAMINED: WASHINGTON: near Columbus, Klickitat Co., *Suksdorf* 863 (M, UC); along Beverly Creek, Wenatchee Mts., Kittitas Co., *Thompson* 6388 (M, Th). OREGON: bluffs of the Columbia at Grants, *Howell* 1505 (M, UC); bluffs of Columbia River, Summit, *Henderson* 393 (UC).

61. *Lomatium Suksdorfii* (Wats.) Coult. & Rose, Contr. U. S. Nat. Herb. 7: 239. 1900, in part, and as to name-bringing synonym.

Peucedanum Suksdorfii Wats. Proc. Am. Acad. 20: 369. 1885.

Cogswellia Suksdorfii (Wats.) Jones, Contr. Western Bot. 12: 32. 1908.

Plants caulescent, glabrous, 9–21 dm. tall; stems from a cluster of old leaf sheaths; leaves obovate, the blades about 20 cm. long, quinate, biquinate, or biternate, then 1–2-pinnate, the leaflets remote, linear, acute, 10–30 mm. long, 1–4 mm. broad, the petioles 14–15 cm. long, sheathing below, cauline leaves similar or with an entirely sheathing petiole; peduncles exceeding the leaves; umbels 13–25-rayed, the rays unequal, 3–11 cm. long, spreading; involucl bracts several, linear, acuminate, subscarious, about equalling the yellow flowers, deciduous in the mature plant; umbellets many-flowered, the fruiting pedicels 6–17 mm. long; fruit linear-oblong, 15–32 mm. long, 7–8 mm. broad, the wings narrower than the body, the oil tubes 1, rarely 3–4, in the intervals, 2 on the commissure.

TYPE: *Suksdorf*, on dry rocky mountain sides, W. Klickitat Co., Washington, June and July 1883 (M, NY, UC type coll.).

DISTRIBUTION: Klickitat Co., Washington.

SPECIMENS EXAMINED: WASHINGTON (Klickitat Co.): Bingen, *Suksdorf* (NY); *Suksdorf* (M, NY); *Suksdorf* 503 (NY).

61a. *Lomatium Suksdorfii* (Wats.) Coult. & Rose var. *Thompsonii* Mathias, var. nov.

Planta foliis caulibusque pubescentibus, foliis biternatis, rare quinatis, deinde bipinnatis, foliolis 8–16 mm. longis, 1–2 mm. latis; bracteis involuclli filiformibus, floribus longioribus; ovariis et fructibus immaturis puberulis, fructibus maturis glabratis; fructibus 24–28 mm. longis, 8–10 mm. latis.

Leaves biternate, rarely quinate, then bipinnate, the leaflets short, 8–16 mm. long, 1–2 mm. broad; foliage and stems finely and sparingly pubescent; involucl bracts filiform, longer than the flowers; ovaries and young fruit puberulent, the mature fruit glabrate; fruit 24–28 mm. long, 8–10 mm. broad.

TYPE: *Sandberg & Leiberg* 489, Peshastin, Okanogan Co., 340 m., 19 July 1893 (M 137759 TYPE, NY, UC).

DISTRIBUTION: Chelan and Okanogan counties, Washington.

SPECIMENS EXAMINED: WASHINGTON: *Vasey 300* (NY); open slopes above Ingalls Creek, Chelan Co., *Thompson 9000* (M, NY, UC); rocky bank 2 miles west of Dryden, Chelan Co., *Thompson 5989* (M, Th).

This variety is named in honor of Mr. J. W. Thompson, of Seattle, Washington, whose collections in that state have greatly aided in the study of this genus.

62. *Lomatium Brandegei* (Coult. & Rose) Macbr. Contr. Gray Herb. n.s. **56**: 35. 1918.

Peucedanum Brandegei Coult. & Rose, Bot. Gaz. **13**: 210. 1888; Rev. N. Am. Umbell. **72**. 1888.

Cynomarathrum Brandegei Coult. & Rose, Contr. U. S. Nat. Herb. **7**: 246. 1900.

Cogswellia Brandegei (Coult. & Rose) Jones, Contr. Western Bot. **12**: 32. 1908.

Plants caulescent, 1.5–6 dm. tall, from an elongated tap-root; stems glabrous, alternately few-branched; leaves mostly basal from a cluster of dried sheaths, obovate, the blades 8–20 cm. long, ternate, then 2–3-pinnate, the leaflets remote, linear-lanceolate to oblanceolate, 10–40 mm. long, 1.5–8 mm. broad, acute, mucronate, the margins glabrous to granulate-roughened, the petioles 1.5–14 cm. long, shortly sheathing below; peduncles exceeding the leaves; umbels 10–21-rayed, the fruiting rays spreading, sometimes reflexed, subequal, 4–43 mm. long; involucre bracts several, linear, acute, subscarious, longer than the pedicels; umbellets 10–25-flowered, the fertile flowers 1–5, the flowers yellow, the fruiting pedicels 0.5–5 mm. long; fruit linear-oblong, 9–12 mm. long, about 4 mm. broad, mostly reflexed, the wings narrower than the body, the oil tubes 1–4 (usually 3) in the intervals, 6–7 on the commissure.

TYPE: *Brandegee 799*, Walla Walla region, Washington, May 1883.

DISTRIBUTION: Rocky slopes, 3000 to 6500 feet, Chelan, Okanogan and Kittitas counties, Washington.

TYPICAL SPECIMENS: WASHINGTON: dry open slopes below Stuart Pass, Chelan Co., *Thompson 7728* (M, NY, UC, US); yellow pine slopes of Tronson Ridge, Chelan Co., *Thompson 9310* (M, NY, Po, UC).

63. *Lomatium nudicaule* (Pursh) Coult. & Rose, Contr. U. S. Nat. Herb. **7**: 238. 1900.

Smyrniium nudicaule Pursh, Fl. **1**: 196. 1814.

Ferula nudicaulis Nutt. Gen. **1**: 182. 1818.

Pastinaca nudicaulis (Pursh) Spreng. ex Linn. Syst. Veg. ed. Roem. & Schult. **6**: 587. 1820.

- Ferula Nuttallii* DC. Prodr. 4: 174. 1830.
Seseli leiocarpum Hook. Fl. Bor.-Am. 1: 263. 1834.
Peucedanum latifolium Nutt. ex Torr. & Gray, Fl. N. Am. 1: 625. 1840, not DC. (1830).
P. leiocarpum Nutt. ex Torr. & Gray, Fl. N. Am. 1: 626. 1840.
P. leiocarpum Nutt. var. *campestre* Nutt. ex Torr. & Gray, Fl. N. Am. 1: 626. 1840.
P. nudicaule Nutt. ex Torr. & Gray, Fl. N. Am. 1: 627. 1840, not of later authors.
P. Nuttallii Wats. Bot. King Exp. 128. 1871, not *Seseli Nuttallii* Gray (1870).
P. triternatum acc. to Gray, Proc. Am. Acad. 8: 385. 1873, not Nutt. (1840).
P. robustum Jepson, Erythea 1: 9. 1893.
Lomatium platyphyllum Coult. & Rose, Contr. U. S. Nat. Herb. 7: 238. 1900.
Cogswellia nudicaulis (Pursh) Jones, Contr. Western Bot. 12: 31. 1908.
C. latifolia (Nutt.) Jones, Contr. Western Bot. 12: 31. 1908.
C. platyphylla Coult. & Rose, Contr. U. S. Nat. Herb. 12: 450. 1909.

Plants acaulescent, rarely with 1 stem leaf, 2.5–7 dm. tall, glabrous, from a long thickened tap-root; leaves broadly ovate, the blades 9–18 cm. long, 1–2-ternate, then pinnate, the leaflets distinct, lanceolate to broadly ovate, entire or toothed and lobed at the apex, 1.5–9 cm. long, 0.5–4 cm. broad, the petioles 4–25 cm. long, sheathing to above the middle; peduncles exceeding the leaves, swollen at the apex; umbels 10–20-rayed, the rays 1–20 cm. long, ascending, usually all fertile, somewhat swollen at the apex; involucre absent; umbellets many-flowered, the flowers yellow, mostly fertile, the fruiting pedicels 3–15 mm. long; fruit oblong, 10–14 mm. long, 3–5 mm. broad, the wings narrower than the body, the oil tubes solitary in the dorsal intervals, 1–several in the lateral intervals, 4–7 on the commissure.

The Indians eat the tops of the plant and boil it in their soups.

TYPE: *Lewis*, on the Columbia River (Rock Fort Camp, at The Dalles), Washington (Ph).

DISTRIBUTION: Alberta and British Columbia to central California, east to Idaho and western Utah.

TYPICAL SPECIMENS: WASHINGTON: Wenatchee Mts., Kittitas Co., *Elmer* 475 (NY, Po, US); Peshastin, Okanogan Co., *Sandberg & Leiberg* 487 (NY, UC, US); Leavenworth, Chelan Co., *Thompson* 8455 (M, NY, Po, UC). CALIFORNIA: Genesee Valley, Plumas Co., *Hall & Babcock* 4441 (M, UC, US); near Marston Station, Plumas Co., *Heller* 10834 (NY, UC, US); Yreka, Siskiyou Co., *Butler* 1363 (Po, UC, US).

The Nuttall type of *Peucedanum leiocarpum* has pedicels mostly longer than the fruit, oil tubes solitary in the intervals, and linear-lanceolate leaflets. The Nuttall type of *P. latifolium* has pedicels shorter than the fruit, oil tubes several in the intervals, and ovate to suborbicular leaflets. However, in the numerous specimens examined the character of short pedicels is combined with linear leaflets, and the oil-tube number is variable. Because these various forms inhabit the same range it is possible that they represent a hybrid mixture of two formerly distinct species and the hybrid generations have become dominant in the region. In every case, however, the inflated peduncle is a constant and easily discernible character setting this species off from all others in the genus.

EXCLUDED SPECIES

- Cogswellia duchesnensis* Jones, acc. to Gray Card Index, in err. = **Cymopterus duchesnensis** Jones, Contr. Western Bot. 13: 12. 1910.
- Cogswellia lapidosa* (Jones) Rydb. Fl. Rocky Mts. 627. 1917 = **Cymopterus longipes** Wats. Bot. King Exp. 124. 1871.
- Cogswellia Lemmoni* (Coult. & Rose) Jones, Contr. Western Bot. 12: 33. 1908 = **Pseudocymopterus montanus** (Gray) Coult. & Rose, Rev. N. Am. Umbell. 74. 1888.
- Cynomarathrum Macbridei* A. Nels. Bot. Gaz. 54: 142. 1912 = **Pseudocymopterus humboldtensis** (Jones) Mathias, Ann. Mo. Bot. Gard. 17: 325. 1930, ex char.
- Lomatium lapidosum* (Jones) Garrett, Spring Fl. Wasatch Reg. 110. 1927 = **Cymopterus longipes** Wats. Bot. King Exp. 124. 1871.
- Lomatium Lemmoni* Coult. & Rose, Contr. U. S. Nat. Herb. 7: 213. 1900 = **Pseudocymopterus montanus** (Gray) Coult. & Rose, Rev. N. Am. Umbell. 74. 1888.
- Peucedanum lapidosum* Jones, Zoe 2: 246. 1891 = **Cymopterus longipes** Wats. Bot. King Exp. 124. 1871.
- Peucedanum Lemmoni* Coult. & Rose, Bot. Gaz. 14: 277. 1889 = **Pseudocymopterus montanus** (Gray) Coult. & Rose, Rev. N. Am. Umbell. 74. 1888.
- Peucedanum ludovicianum* Raf. ex Torr. & Gray, Fl. N. Am. 1: 629. 1840, nom. nud. = **Oxypolis** sp.
- Peucedanum Newberryi* Wats. Am. Nat. 7: 301. 1873 = **Cymopterus Newberryi** (Wats.) Jones, Zoe 4: 47. 1893.
- Peucedanum rigidius* (L.) Baill. Hist. 7: 187. 1880 = **Oxypolis rigidior** (L.) Raf. Neogenyt. 2: 1825; Sér. Bull. Bot. 1: 218. 1830.
- Peucedanum salmoniflorum* Coult. & Rose, ex Holzinger, Contr. U. S. Nat. Herb. 3: 228. 1895 = **Leptotaenia salmoniflora** Coult. & Rose, Contr. U. S. Nat. Herb. 7: 201. 1900.
- Peucedanum ternatum* Nutt. Gen. 1: 182. 1818 = **Oxypolis ternata** (Nutt.) Heller, Cat. N. Am. Pl. 5. 1898.

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